An Address

ON THE

POSITION OF THE POOR-LAW MEDICAL OFFICER.

Delivered before the Parochial Medical Officers' Association in Glasgow,

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GENTLEMEN,—I have to thank you in the warmest way for the great honour you have done me in asking me to preside over this, your first, meeting of the Poor-law Medical Officers' Association. It is, indeed, a high privilege, and I only hope to be in some measure equal to the occasion. It is now nearly forty years since I was chosen Poor-law medical officer to a small Aberdeenshire Parish. Not very long after one of my nearest neighbours was ousted from the position of Poor-law medical officer of the important parish he then held. His dismissal, not for any offence but, if I remember rightly, for asking an increase of salary, created much sympathy amongst his medical brethren. An attempt—alas, too feeble and too shortlived—was made by some of us to get the then Board of Supervision to lay down a distinct rule refusing to sanction such a proceeding without the case being submitted to them in the first instance to say "Yea" or "Nay." The Board of Supervision had by law such jurisdiction in the case of the inspector, and surely it was thought to be only right that this power should be extended to the medical officer as well. No doubt there was and is no legal enactment authorising them to claim such authority, but it is, I believe, still open to them to ensure to us fixity of tenure by making the grant in aid of medical relief dependent upon right of appeal being allowed to every Poor-law medical officer participating in that grant. That such a right ought to be given is evident to any properly constituted mind when we consider that in the matter of ordering additional relief in the shape of cordials, food, and clothes, the Poor-law medical officer is only too likely to run counter in his views to those held by representatives of the ratepayer, who naturally grudges any expenditure tending to increase, by however little, the ordinary burden of his parish taxes. In the nature of things he cannot be but an imperfect judge of what is really required. To ensure the working of such an organisation as that to which we belong a buffer is needed, and that buffer, we humbly hold, ought to be the Local Government Board in Scotland as it is in England. I am bound in justice to add, as I am glad to have this opportunity of saying, that I believe the Local Government Board does, as far as it can, unofficially set its face against arbitrary changes of Poor-law medical officers. I am not quite so sure that they equally insist on fair remuneration for the medical man's services in all cases. I can only speak from what I can gather in a casual way. In some cases I have heard of the yearly salary is clearly too small for the work expected, and while I do not doubt that even in these instances the paupers get all the medical attention necessary, yet I consider it the duty of the Local Government Board to make sure that the pay is sufficient (and amply sufficient) to provide for a generous amount of medical attendance even to the pauper. For poor people, gentlemen, ought to be generously treated, and if they be so treated, speaking from a long and varied experience, I can say that they are not ungrateful. No doubt many paupers are far from truthful; many are disposed to grumble without due cause; many are dirty, careless, and neglectful of orders; yet I am happy to be able honestly to declare that it has been a pleasure to me to do what I could for them, and I have reason to think they reciprocated my feelings. Gentlemen, I can fairly claim as true of our profession, more than of any other, even the clerical, the saying: "Homo sum; Humani nihil a me alienum puto."

But, unselfish as we ought to be and are, we have the right to be properly remunerated for our work and to be paid in such a fashion that we may be able to lay something by for our old age. Surely the position of Poor-law medical officer is one that should be secure in every sense, and to properly guarantee this security I believe it to be absolutely necessary to have a superannuation fund to fall back upon when the day comes—when come it must—when he shall have to give up his incessant and toilsome duties and retire into private life. The post of Poor-law medical officer is too often secured merely as a temporary advantage or stepping-stone to a higher-class practice. This is not as it ought to be. In our larger centres, at all events, the Poor-law medical officer should be a suitably salaried independent civil servant. It is only in this way he will properly buckle to his work and feel that pride in it which ensures its being well and conscientiously done. Our Poor-law system in Scotland, which with all its faults has stood the test of half a century's trial, and will continue so to stand, with a few unimportant amendments such as I have mentioned and others unconnected with our work, was originally framed in the busy and benevolent brain of a distinguished member of our profession—Dr. Alison. Perhaps you will allow me to quote from one who is, if not the most learned, certainly the best known and kindliest of medical writers—Dr. John Brown. He says in his paper on Our Gideon Grays in the first volume of "Horæ Subsecivæ"—that most charming book of essays which I would advise every young medical man to read if he has not read it already:—

"In 1846 a voluntary association of medical men was formed in Edinburgh, with the public-hearted Dr. Alison as chairman. Its object was to express their sympathy with their brethren in the remote country districts of Scotland in regard to their unremunerated attendance on paupers and to collect accurate information on this subject. The results of their benevolent exertions may be found in the appendix to the first report of the Board of Supervision. It is probably very little known beyond those officially concerned. We therefore give some of its astounding and lamentable revelations. The queries referred to the state and claims of the medical practitioners in the rural districts of Scotland in relation to their attendance upon the permanent or occasional parochial poor. Out of 325 returns ninety-four had received *some* remuneration for attendance and outlay. In one of these instances the remuneration consisted of 3*s.* for twelve years' attendance on seventy constant and thirteen occasional paupers; a fine question in decimals, What would each visit come to? But worse remains. One man attended 400 paupers for eight years and never received one farthing for his skill, his time, or his drugs. Another has the same story to tell of 350, some of them thirty miles off; he moderately calculates his direct loss from these calls on his time and his purse at £70 a year. Out of 253 who report 208 state that, besides attending for nothing, they had to give on occasions food, wine, and clothes, and had to pay tolls, &c. 136 of the returns contain a more or less definite estimate in money value of their unrequited labours; the sum-total given in by them amounts to £34 457 in ten years, being at the rate of £238 for each. They seem to have calculated the amount of medical attendance, outlay, and drugs for each pauper annually at the very moderate average of 4*s.* Is there any other country on the face of the earth where such a state of matters can be found?"

Gentlemen, I have no doubt, with due official encouragement, there are men here present who, knowing as they do the intimate working of the Poor-law, will yet be able to add many a stone to the cairn of a proper system of relieving the poor, a subject which is now exciting the attention of statesmen. We have the highest authority for saying the poor will "be always with us," and much of their comfort will continue to depend on a proper organisation for their medical relief.

If I be not detaining you too long I should like to say a few words regarding our special position in the Highlands. If the salaries of the Poor-law medical officers only had reference to attendance on paupers actually on the roll there would not be much to complain of; but, as you can easily understand, in the remoter Highlands and Islands there is a large proportion of the population who must have medical assistance and yet are not in a position to pay such fees as would make up a fair living for a resident doctor. We, as a profession, do not assert ourselves enough, and while the minister and schoolmaster get supplements from other sour. I need hardly say at a distance, the doctor receives no formal recognition. Indirectly he does get paid by the fiction of raising his salary as Poor-law medical officer. Half a loaf is better than no bread: and yet such a method is only a makeshift, inasmuch as the salaries are in most

cases lamentably little, while the work is very heavy. Difficulties have also arisen as to who are or are not included amongst the non-paying class. A more straightforward system should be devised which would distinguish distinctly those who should get medical relief free or otherwise. Seeing that the other learned professions have their manses, so also should the doctor have his. Here an unfortunate technical difficulty comes in as to powers of borrowing. I am not sure whether the Parish Council now has that power. If it has not, it ought to have leave to borrow, under proper restrictions of course. Certainly the old parochial boards had not, at least for any such purpose as I speak of. Again the result of my observation is that the appointment should, as a rule, be of sufficient value to enable the incumbent to keep a qualified assistant. It is of great importance that such heavy work as a large parish, intersected it may be with sea lochs, requires should be as much as possible methodised. There ought to be stations, not only for vaccination, but for advice and for dispensing drugs, at every corner of the parish, visited on certain days. To attend regularly single handed, is simply impossible, but with an assistant there need rarely be any difficulty. A course of open air training after being capped, would vastly improve the physique of many a mentally hard worked student, and give him at the same time that feeling of trust in himself that only actual practice can supply. With these benefits let us hope he would be content with a small salary, and not encroach too much on what, with large additions, will, I fear, be only a poor remuneration for banishment, I may say slavery in a wide Highland parish.

ON VARIOUS FORMS OF TALIPES AS DEPICTED BY "X" RAYS.

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THE changes which the bones and joints of the foot undergo during and after long persistence of such deformity as originates either in position during intra-uterine life or in irregular and abnormal muscular contraction have been much studied after death and on dry bones. This method, though it may give a fairly accurate idea of the abnormal form of each separate bone, does not indicate their altered relationship to each other during life—that is to say, during the continuance of muscular and fascial tension. I, having large opportunities of seeing such cases, happened to mention to Mr. Sydney Rowland my project of taking skiagrams of certain patients, and was delighted to find him deeply interested in the same subject. It was therefore arranged that we should take skiagrams of all foot deformities thus available, and that I should append a description of the accompanying changes so brought to light.[1] It will, however, be well to commence with certain general observations. At birth there are in the seven bones of the tarsus only two centres of ossification, one in the astragalus and one in the os calcis. A third centre appears in the cuboid at from a week to a month after birth; one in each of the other four bones between the end of the first and fourth year. The conversion of each tarsal constituent into bone spreads from these centres but very slowly; each one for a lengthened period consists almost entirely of cartilage—a substance which the "x" rays traverse easily, leaving on the sensitised film only a shadow, very slightly or not at all darker than that of other soft parts, so little differentiated in fact and so indefinite in form that it is impossible to clearly trace therein any deviations. We cannot, therefore, obtain useful skiagrams of the infantile foot. Another very important result of this inchoate condition is the easy yet profound effect of comparatively slight forces, and yet it is not to be supposed that a little baby muscle can by its unaided contraction bend and deform even a provisional cartilage unless other and more persistent forces be superadded. These are fibrous and fascial contracture, together with constant and continual growth. Let me illustrate the matter thus. No muscle passes simply from one to another point of the same bone, it plays over at least one joint; if its contraction be abnormally strong and constant, or if its antagonists have lost power, it (supposing it to be a flexor) keeps that joint persistently, in some cases also abnormally, bent. In a short time the merely fibrous parts (sarcolemma and sheath) of the muscle shorten and adapt themselves to the new posture, as also do the subtending fasciæ—the contraction becomes contracture. In the meantime the bones, or rather cartilages, are constantly growing; but the tight bond just described permits of but little increase on one aspect, in the instance chosen on the flexor aspect of the bone, because on that side pressure is excessive, while on the other side growth is favoured by diminution of pressure. If in the spring we bind with a cord the growing branch of a tree to the nearest strong limb we shall soon see that branch bend more and more towards the bond; indeed, in a certain time the branch will have become bent like a bow, and it will after the cord is cut retain that form at least to a very great degree. The

FIG. 1.

Talipes equinus. It is to be regretted that this skiagram includes but a small part of the metatarsus.

branch, too, will measure longer—that is, it will have grown more on the convex than on the concave side. So with the bones of a limb or extremity; any such that are in infancy or early youth tied down by contractured or congenitally short muscles or fasciæ bend and incline by the mere force of growth to the side thus tied down, while certain surfaces or processes are shortened or lengthened respectively by the uneven incidence of pressure. This also, it must be remembered, is aided by the distal bone of certain joints being drawn off the articular surface of the proximal one. These same results, of course, follow paralysis of a muscle or of a set of muscles, leaving the antagonists free to deflect bones and then to become, together with neighbouring fasciæ, contractured. Whether originating in one or the other of these methods,[2] such contracture has always when once begun a great tendency to increase, just as a cicatrix, especially of a burn, may produce deformation of bones, therefore of limbs and extremities, even equinus or varus, as Mr. Walsham and Mr. Kent Hughes have depicted.

[1] I have already described in the Archives of Clinical Skiagraphy a very remarkably deformed foot, so anomalous in its lack of development as to be hardly adaptable to this series.

[2] I postpone for the present consideration of another origin—namely, position intra- and extra-uterine.

This genesis of talipes holds good for all but certain congenital forms, and even in these, as I shall seek occasion to show, some of these conditions are potent in the production of deformity. These premisses being thus fixed we are in a position to examine and account for the changes revealed by the Roentgen shadow in different deformities, beginning with a severe case of pure equinus in a young man in his nineteenth year. The deformity began when he was three years old. In spite of the medical attendant's advice no treatment was, till a few weeks ago, adopted. For the sake of comparison I append a skiagram of a normal foot in strong plantar flexion—i.e., in a position as closely imitative of equinus as is possible to a well-formed foot (Fig. 2). The two points for consideration are changes in shape and changes in relative position.

Changes in shape.—The os calcis is of the same length in both skiagrams. The depth (from above downward) is also the same in the body of the bone; that of the anterior tubercle is greatly increased—viz., if we take in all measurements one-tenth of an inch as our unit, it is in the normal foot at posterior end, 12; at anterior, 10; in equinous foot at posterior end, 15; at anterior, 12.[3] The surface for articulation with the astragalus is very much flattened; the sustentaculum is also flat and small. The lower part of the facet for the cuboid retreats in a backward direction. The astragalus has undergone marked changes. The length of the whole bone is in both skiagrams equal—namely, 23 in each; but it is quite evident that the neck is bent not only upon the body but on itself, and on measuring both bones (instead of straight across) from the middle of the head to the anterior and thence to the posterior end of the trochlea we find that the sum of these is in the normal foot 26 and in equinus 28. The bone then is not shortened,[4] but rather lengthened and then bent upon itself. The lengths and therefore proportions to each other of different constituents are changed, the body being shortened and the neck longer and thinner.

	Normal.	Equinus.
From anterior to posterior margin of the trochlea	18	14
Neck from middle of the head to the anterior tip of the trochlea	13	17
Depth of the neck in the thinnest part	9·5	7
Angle of the neck with body from the middle of the head to anterior tip, thence to posterior tip of the trochlea	127°	107°

In consequence of this form of the neck the sinus tarsi is very much increased in width from above downward—i.e., in this position of the foot from before backward. The scaphoid thus has become much more wedge-shaped:—

	Normal.	Equinus.
Inner, upper breadth	5·7	6·8
Outer, lower breadth	4·5	3·0

being wider on the inner, narrower on the outer border. I find no other bone lying in front of the medio-tarsal joint materially changed in shape.

Relationship of foot to leg.—The os calcis is very much raised; thus in the skiagrams—

	Normal.	Equinus.
Angle between axes of the os calcis and of the tibia	90°	42·5°

yet the former does not, as sometimes is the case, articulate with the back of the latter. The ankle-joint is in both skiagrams much extended; in the normal foot the posterior tip of the trochlea astragali lies behind the tibio-peroneal socket; in the equinus it lies very nearly one-third of the tibia's breadth within it—i.e., the posterior third of that socket is empty. A line continuing the axis of the tibia downwards passes in the normal foot through the inter-osseous ligament and the hinder end of the anterior tubercle of the

FIG. 2.

A normal foot in strong plantar flexion.

[3] These are in the full-size skiagram, the reduced plates here given will measure differently. The normal measurements have been compared with dry bones and found, allowing for a certain enlargement by divergence of rays, to be on a fair average.

[4] Vide Walsham and Thorne: Deformities of the Human Foot, p. 273: "The whole bone is compressed in its antero-posterior axis."

os calcis. Thus behind that line there lie only the body of the os calcis and nearly one-half of the trochlea and body of the astragalus. In the equinus such line courses along the lower border of the neck of the astragalus, cuts off a bit of the outer end of the scaphoid, and runs on the joint between the cuboid and external cuneiform. Therefore, behind that line are placed the whole of the os calcis with little more than a quarter of the body of the astragalus, the sinus tarsi, all the cuboid, a portion of the scaphoid, and the four outer metatarsals. These measurements show that in equinus the plantar flexion reaches a far higher grade than any to which the normal extremity can attain—indeed, so strongly marked is the posture that at least four-fifths of the deformed foot lie behind the prolonged axis of the leg bones. This malposture is only in a certain degree due to excessive plantar flexion at the ankle-joint. Most of it is caused by the changes in shape of the two posterior tarsal bones and chiefly by the bend upon the body and on itself of the neck of the astragalus, crooked as it is downward, like a hawk's beak. The wedge form of the scaphoid as also of the front facet on the anterior tubercle of the os calcis also contribute; but the most important factor is the one just mentioned, and it is curious to note how little the bones which lie in front of the tarsal joint[1] are changed or contribute to the deformation.

(To be concluded.)

ON THE TREATMENT OF INOPERABLE CASES OF CARCINOMA OF THE MAMMA: SUGGESTIONS FOR A NEW METHOD OF TREATMENT, WITH ILLUSTRATIVE CASES.[1]

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(Concluded from page 107).

THE next case that I wish to bring under notice is that of a married woman aged forty years, with no family, who was admitted to the Glasgow Cancer Hospital on Sept. 2nd, 1895, suffering from a large tumour of the right mamma. It had existed to the patient's knowledge for five and a half years and had not been operated on. Her family history was satisfactory, and personally she had been a very healthy woman all her life. She began to menstruate at thirteen years of age and the menses still continue. At present they come every three weeks. The account she gave of the appearance of the tumour was that it followed an injury five and a half years ago that at first it grew very slowly, but that it had increased much more rapidly since she sustained a blow on it from a door nine months ago. Further, she had had continual pain in it as well as in the neck, the pain passing through to the back. It came on more severely at times and was of a shooting nature, and at nights it kept her from sleeping by its severity. She had got thinner, but had not felt specially ill or weak. Her condition on admission, as noted in the hospital journal, was as follows. She was pale and worn-looking, and gave the impression of being a nervous and emotional woman. Locally the right breast was occupied by a large tumour, which involved the whole organ save its extreme lower margin. The tumour was densely hard, but uniformly so and more or less rounded and smooth. It was adherent to the skin over a large area, this skin being infiltrated and reddened. The mass was somewhat tender. At its upper part there was a distinct cutaneous nodule about half an inch long and one-fifth of an inch broad. The tumour was not fixed below, though there was no great freedom of movement. The skin around the breast, especially at its lower part, showed congested vessels and was apparently hyperæmic. The nipple was retracted and fixed. In the axilla there were a number of enlarged hard glands rather deep and fixed. The pectoral fold running up to the axilla was slightly thickened and indurated. In the first interspace some small shot-like nodules were felt under the skin. Also over the clavicle under the skin there were quite a number of them, and they gave a rough feeling to the surface of the bone. In the supra-clavicular space and in the posterior triangle of the neck there was a wide infection of the lymphatic glands—one especially hard and fixed mass lying slightly above the clavicle. Numerous enlarged glands could be traced as high as the lobe of the right ear. On the left side, in the anterior triangle of the neck, just above the inner end of the clavicle, there was a small, hard, enlarged gland. There was no œdema of the arm, but the patient complained of almost constant pain down each side of the arm and of pain in the neck. The left breast and axilla seemed normal. No secondary deposits could be detected in any of the organs of the body. The only suspicious point was that the percussion note over and just below the right clavicle was impaired, while anteriorly and posteriorly, the respiratory murmur was somewhat prolonged and hard at the apex, and a slight creaking and grating could be heard. Otherwise the lungs were normal. I learnt from her that she had recently applied for admission to one of the local infirmaries but had been refused, as the surgeons who saw her considered that nothing in the way of operation could be done. I was of the same opinion, for the disease was evidently carcinoma, an opinion subsequently verified by Dr. Buchanan microscopically, and any attempt to locally remove the disease would be futile I considered, but after what I had observed in the previous case I was not without hope that something might be done to retard the progress of the disease, although, from its great extent, as compared with the first case, I was not so sanguine of success. However, I admitted her to the hospital. What I looked on as the unfavourable feature of the case was the implication of the glands, not only in the neck, where there was a hard and irregular chain of them, matted together and quite fixed, and running up the posterior border of the right sterno-mastoid, but also in the axilla, where there was a deep and immovable mass of them. After admission she had to have half-grain pills of opium for the pain, which seemed severe. I put before her the question of the removal of the tubes and ovaries in her case, but she could not bring herself to submit to an operation which I could advise her to undergo as regards the risk involved in it, though not able to promise her with certainty a successful result in the matter of cure. After her admission quite a month elapsed without anything being done. During that time it was clear that the disease was extending, as the hospital journal of Sept. 30th says: "Extension of disease is seemingly rapid;" and again on Oct. 2nd it is noted that "the skin over the prominent, nodule above the centre of the upper margin of the tumour is reddened, and that downwards and inwards, diagonally from the nipple, there is another nodule of smaller size; while on the outer side of the breast, on and beyond the margin of the tumour, lying in an area of congested skin, there are nine separate and distinct small nodules in and just under the skin, the size of peas or small shot. In the right axilla are three cutaneous nodules, and the deep mass of hard fixed glands; while below the centre of the right clavicle is an irregular mass of enlarged glands evidently growing quickly. Above the clavicle in the anterior and posterior triangles of the neck are the glands much enlarged and matted together, and extending in front of and behind the sterno-mastoid as high as the angle of the jaw. On the left side of the neck there is present a small adherent nodule between the tendons of insertion of the left sterno-mastoid and an enlarged left supra-clavicular gland." At this time she felt she was not improving, and consented to my doing anything that I thought would benefit her condition, so on Oct. 3rd, I removed her tubes and ovaries. The operation was not an easy one, as the uterine annexa were very adherent, thickened, and altered in appearance as well as in situation, the ordinary anatomical arrangements of the parts being quite obscured. The after progress of the case was, however, uninterrupted, and at the end of three weeks she had completely recovered. The journal note of Oct. 12th says that it was evident that the cutaneous surface of the tumour was less vascular, the red blush which covered it entirely being very noticeably diminished; while on Oct. 14th it was remarked that the patient stated very emphatically of her own accord that she felt "in a different world," the pain in her breast being so much easier as to be almost gone. She said, too, that she moved her neck more freely and with less

[1] I here must except the heads of the metatarsal bones, which, however, are only secondarily affected.

[1] A paper read before the Edinburgh Medico-Chirurgical Society on May 20th, 1896. Microscopic sections, kindly prepared by Dr. R. M. Buchanan, were shown of the growths in the cases described in the paper.

pain. In confirmation of the diminished pain the matron stated that she slept well at night and had not required any opium since the operation. On Oct. 14th she commenced to take two 5-gr. thyroid tabloids twice daily, as I decided to follow strictly the mode of procedure in the first case. On Nov. 9th, five weeks after the operation, it was noted that the mass above the clavicle certainly seemed smaller and less fixed, the neck being moved freely in any direction. Diminished size and vascularity in the breast tumour were admitted by all who had watched the case to be apparent, though slightly marked, while the nodule at the upper zone of the breast was superficially distinctly less and had a yellowish dull colour, quite different from its former glazed and red appearance. On Dec. 3rd, two months after operation, the above nodule, as it continued to show decided atrophic changes and to shrink, was removed under cocaine so that it might be examined by the pathologist to the hospital, Dr. R. M. Buchanan. The journal report continues: "There is now a striking difference in the size of the tumour of the right mamma as compared with its former state and over the inner and upper parts of the tumour the skin is becoming freer and can now be pinched up, though it is still distinctly thickened and infiltrated. Formerly it was quite impossible to grasp it at all, so firmly was it adherent to the tumour." The patient's progress was, unfortunately, interrupted by a septic suppuration which followed the excision of the nodule under the cocaine, and on Dec. 9th I had to open an abscess over the shoulder, the scar of which can still be seen anteriorly. After this she got on well and the spot where the nodule was excised cicatrised soundly and can now be seen quite healed. This I thought interesting as cutting out a nodule from a cancerous breast is very apt to leave a sore that refuses to heal and even fungates. The report from the pathologist of the microscopic appearances of the excised nodule was that there was a great increase in the stroma and that the epithelial cells were undergoing marked fatty degeneration; in other words, that there was a more cicatricial condition of the tissue, such as we see in the cases of atrophic or withering scirrhous mammæ. On Jan. 10th the patient was allowed to leave the hospital to go to the coast for a change. I am afraid that while absent she did not take that care of her health that I should have liked and was remiss in taking the tonic and the thyroid tabloids, and on her return on Feb. 25th, although looking well in herself, I did not consider the local condition so satisfactory, the glands in the neck being more attached to the skin, larger, redder, and more fixed. Over the clavicle an increase of infiltration was occurring, while in the axilla some fresh small nodules had arisen. The breast itself seemed more adherent again to the skin and redder, and the outlying nodules larger. On March 2nd I re-admitted her to the hospital as I was satisfied she was not doing justice to herself outside and was not allowing the remedial measures that had been employed to have a fair chance. She was kept in bed and three thyroid tabloids were administered daily. Under these measures she improved gradually and seemed to be free from pain, sleeping well without any opiates. On April 7th there was noted the increased size of the nipple of the right breast. It was of a pale pinkish colour, somewhat glossy, was like a raspberry in shape, and about four times the size of the left nipple. It now stood out prominently from the centre of the tumour, while formerly it was sunken and retracted. I have exhibited this patient, not putting her forward as a case that is cured, but simply as illustrative of the changes that were noted in the first case, but which have now entirely disappeared in her. Thus, in the enlarged supra-clavicular glands, if examined closely, areas of yellowish-white colouration will be noted, which indicate, I consider, the presence of fatty degeneration—a condition present in the cancerous masses in the first case before they eventually disappeared. The same can be seen in several of the nodules in the vicinity of the breast, and recently one of them, just above and to the right of the nipple, broke, and has left a yellowish scab with a subjacent ulcer. A comparison of the two casts of the right mamma taken at intervals of five months shows the difference in the size of the mammary tumour at the two periods. Altogether I am inclined to think that the disease is in a more quiescent stage and gives some indications of a possible cure.

The last case I wish to bring under notice is that of an unmarried woman, aged forty-nine years, who was admitted to the Glasgow Cancer Hospital on Dec. 2nd, 1895. She sought advice for a large sore on the left breast, which had been entirely eaten away almost as if it had been removed by operation, but she assured me that nothing was ever done to it and that she had had no advice about it until she came to the hospital. The disease seemed to have existed for six or seven years, and to me one of the remarkable features about it was that it had remained so localised, none of the adjoining glands being apparently as yet involved, and there being no evidence of any secondary deposits in any organs of the body. I was at first inclined to think it was possibly a tuberculous ulcer we had to deal with, but the removal of a portion of tissue from the margin and its examination by the pathologist showed it to be "typically cancerous." The report adds: "There is no evidence of tuberculosis." As the menopause had occurred two years previously I was not prepared to at once remove the tubes and ovaries, and thought it might be a case where the thyroid tabloids might be alone administered with the view of seeing what effect they would produce, and whether under their administration any of the vascular diminution and atrophic changes seen in the other cases would occur. Accordingly, the sore was got into as healthy a condition as possible, and on Feb. 7th, when it was clean in its deeper parts and even showed at places some attempts at cicatrisation, the administration of the thyroid tabloids was commenced, and they have been continued since, being pushed to their full physiological effect. During the three months they have been taken I cannot say that I have observed any marked effect on the sore. The indurated and infiltrated borders are apparently unaltered and show no diminished vascularity, while the ulcerated area has increased below and seems extending. By itself thyroid extract seems to have little effect on the cancerous process, and the question I consider that is opened up by this case is, whether in the light of what has been observed in the other cases, I should see whether the removal of the tubes and ovaries in this case would be of any service. I am satisfied that it would be a mistake to attempt the local removal of the sore. I am not so sure, if my view that ovarian irritation may be the exciting cause of cancer is correct, whether it would not be right, even though the menopause has set in, to see what effect the removal of the uterine appendages would have. If this is done, and the Edinburgh Medico-Chirurgical Society desires it, I will gladly read a note of the case at some future meeting and show the patient.

The conclusion I draw from the two cases I have brought under notice is this—that we must look in the female to the ovaries as the seat of the exciting cause of carcinoma, certainly of the mamma, in all probability of the female generative organs generally, and possibly of the rest of the body. I have felt for some time that the parasitic theory of cancer is an unsatisfactory one in many ways, and that in directing all our energies to working it out we are losing time and searching for what will never be found simply because it does not exist. Further, and bearing on this point, I think we are perhaps in error in assigning to the nervous system the entire regulation of the metabolic changes in the tissues of the body. I am satisfied that in the ovary of the female and the testicle of the male we have organs that send out influences more subtle it may be and more mysterious than those emanating from the nervous system, but possibly much more potent than the latter for good or ill as regards the nutrition of the body, and, undoubtedly, whatever cancer may be, it is very generally admitted that it is a disease of the nutrition of the part affected. To make clear how I think the ovaries may be the exciting cause of carcinoma in the female we must consider reproduction as it takes place in the lowest animals and in the human body. In the former we have no special cells or organs for reproduction. If a hydra is cut into a number of portions each portion will develop into a separate and complete hydra, as Trembley showed more than a hundred years ago. This would seem to indicate that all the cells of the creature possess equally the reproductive power. As we get higher in the scale of life the principle of division of labour comes into play, and in the human body there is seen at an early stage of development the arrangement of the cells of the embryo into separate layers, and subsequently the differentiation or specialisation of these cells into separate organs and tissues. In other words, these cells become of a higher type. But there is one very definitely marked off group of cells which retain their primitive condition and do not specialise into a higher kind of cell—I refer to those whose function it is to reproduce the species. In no way dissimilar at first, they are separated off to form either ovary

or testicle, as the case may be, and through their agency the continuation of the race is assured. In the ovary we have well demonstrated the active proliferating power of these cells, for from it are derived several epithelial formations—viz., the surface epithelium of the ovary, the epithelium of the Graafian follicles, and the cells of the ovary that we speak of as ova.

Now, I consider, comes in this very important question—When these reproductive cells are set aside for this one function do they take away from all other cells of the body their reproductive power, leaving them only the ability to form the special tissue for which they are intended, or do these cells still retain their reproductive power but have it kept in check and control by the ovaries as long as these organs are healthy? I am inclined to the latter view, though I am aware that it is not in harmony with Weismann's teaching on heredity, which would have us believe that there is a very definite distinction between the somatic and germ cells, the latter being handed down in unbroken continuity from parents to offspring, and having nothing whatever in common with the somatic cells, they simply having, as it has been very well put, board and lodging in the human body. I have never felt sure of Weismann's theory. It is no doubt ingenious and attractive; at the same time, it is quite possible that this doctrine of absolute continuity of germ plasma may be incorrect, and, if at variance with what is observed in disease, it shows it to be faulty in a very important respect.

Going, then, on the assumption that the ordinary cells of the body have not lost their reproductive force, but that this latter is held under control by the healthy ovaries, which are simply masses of germinal epithelium, I can conceive it quite possible that any altered secretion of these organs, or any morbid condition of them, might so affect the other cells of the body as to allow their latent reproductive power to come into play, and thus confer on these cells the active proliferating powers of the germinal epithelium. And this is what at present I am inclined to think does take place, and that cancer consists in the epithelium of the part affected taking on the active proliferation which is the marked characteristic of the germinal epethelium; and, though I am not yet in a position to assert it as demonstrated absolutely, I have the belief that the special cells seen in sections of cancer, and known as cancer-bodies, will eventually be shown to be special germinal cells corresponding to the ovum-cells elaborated by the ovary. After this idea had occurred to me I was interested to find that Klebs has come to the conclusion that in cancer epithelial cells become transformed into ovum-cells. He attributes this to the leucocytes exerting a fructifying influence upon the cancer-cells and causing them to multiply. I, on the other hand, while agreeing with him as to this fact, think that in the female there is some ovarian influence which works the change. It may be an altered secretion or it may be the migration of cells—it might even be a parasite in the ovarian cells, for it should be borne in mind in regard to the secretions of the reproductive glands "that, unlike other secretions, their essential constituents are living cells" (Stewart); but in whatever way brought about there seems to me a reasonable ground for thinking that the active processes seen in a cancerous tumour are best explained by regarding the epithelium of the part as having taken on the properties and powers of the germinal epithelium.

It may be said that in many cases of cancerous diseases no changes are perceptible in the ovaries. This may be so because they have not been looked for and because they may be of a delicate nature and require special investigation. We know that there are certain coarse lesions of the ovary that certainly are of a malignant and infective kind and are typical of what we meet with in cancer. I refer to those cystomata of the ovary which sometimes burst and infect the whole peritoneum and even the abdominal organs themselves. I have operated on such cases and had to close the abdomen, as it would have been useless to attempt removal of all the infected parts. I was struck by a paper published by Professor A. Simpson in one of the recent volumes of the Edinburgh Hospital Reports, where such a case had occurred to him, and in the remarks he made upon it he formulates the view that removal of both ovaries seems to predispose to cancer. If this were so, then my theory to explain my success in the first case must fall to the ground, but the point that Professor Simpson has overlooked is that in all the cases he refers to the ovaries were removed *because they were diseased*, and thus these cases in reality support my view that cancer in the female is in all probability due to some altered ovarian condition, which may be either a coarse lesion of the organ or something more hidden or obscure, such as an altered condition of the cells and their secretion. If cases can be shown that have had both healthy ovaries removed and have subsequently been the subject of cancer, then my theory falls to the ground.

Further, if the view I put forward is a correct one, then cancer in the male should be due to some altered condition or secretion of the testicle, for this organ is built up of cells that at one stage of their existence in early fœtal life are so identical with those that form the ovary that for some weeks they are not distinguishable one from the other. I have been looking into this matter, and one or two facts of considerable interest have come to my knowledge, showing that the testicle seems to have the same control over local proliferation of epithelial cells as is seen in the ovary and lactation. Thus, in stags the yearly growth of the horns, which is a local cell proliferation, is under testicular influence, for if a deer is castrated its horns do not grow and, what is more remarkable still, if only one testicle is taken away it is only the horn on that side that does not grow. I have arranged with a friend of mine to carry out this season some experiments on lambs by castrating them only on one side and watching if the horn on that side is absent. Also, I am making inquiries as to the existence of cancer amongst eunuchs, for if my view is correct they should not suffer from it. The only other explanation that might be urged in favour of the removal of the tubes and ovaries affecting the progress of carcinomatous growths, by those who hold the parasitic theory of the disease, is that the operation so profoundly alters the nutrition of the tissues that the parasite no longer finds a suitable nidus for its existence and so perishes. I confess I think this is not likely, though it does not call in question the utility of the operation.

To recapitulate, I would urge the following points:—1. That there seems evidence of the ovaries and testicle having control in the human body over local proliferations of epithelium. 2. That the removal of the tubes and ovaries has effect on the local proliferation of epithelium which occurs in carcinoma of the mamma and helps on the tendency carcinoma naturally has to fatty degeneration. 3. That this effect is best seen in cases of carcinoma in young people, a class of case where local removal of the disease is often unsatisfactory.

In conclusion I would say that my paper has been written without the desire of being in any way dogmatic in the matter of the etiology of cancer. I desire it to be, if anything, suggestive. I am sure that many, like myself, while very desirous that a parasite should be found in cancer, as it would thereby render our chances of dealing with the disease more hopeful, have felt that this view does not satisfy the case and leaves much to be explained. On the other hand, facts such as I have observed indicate, I think, that it is possibly in the direction of an altered condition of the ovary and testicle that we are to look for the real exciting cause of cancer, and, if so, the sooner we direct our energies into that channel the better. I know that I have had nothing in the way of great results, but it must be remembered that I have worked with most unpromising cases and that when large masses of cancer are present it is not easy to bring healing influences to bear upon them. They have got beyond control, whereas in an early stage they might have been amenable to treatment. I am not advocating a wholesale removal of tubes and ovaries for carcinoma. My paper is headed "The Treatment of Inoperable Cases," and I am not in a position to replace the old plan of local removal—which no doubt brings many disappointments, but has had of late years many encouraging results—by a new and untried method. All I feel is that there are grounds for the belief that the etiology of cancer lies not in the parasitic view but in an ovarian or testicular stimulus, and that the whole subject requires careful working out. I need hardly say that if that view is found correct it must materially modify our present lines of treatment. I know it may be said that I am premature in exhibiting these cases, but I am well aware that in the field in which I am a humble worker there are others labouring as equally desirous as myself for the solution of this problem of the cause of cancer, and I am only too glad that they should know any facts that I have observed and that may give a clue to the direction in which to work. I am also well aware that

the views I have put forward are to a large extent problematical; but, whether accepted or not, I am sure I shall be acquitted of having acted thoughtlessly or recklessly, and it will be believed that in all I have done I have had some reason for the faith that is in me, and that I have been actuated solely by the motives that guide all of us in the exercise of our profession—primarily, the interests of those who place themselves under our care, and secondarily, the progress and advancement of the healing art.

Glasgow.

ON SPONTANEOUS RUPTURE OF THE HEART.

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ALTHOUGH spontaneous rupture of the heart is a well-recognised pathological event and the conditions giving rise to it have been more or less fully investigated by such observers as Barth,[1] Birch-Hirschfeld,[2] Böttger,[3] Councilman,[4] Ellenaume,[5] Lancereaux,[6] Le Piez,[7] Leyden,[8] Mögling,[9] Neelsen,[10] Quain,[11] Steven,[12] and Ziegler;[13] and many cases have been published by numerous writers;[14] nevertheless the occurrence is of sufficient rarity to make it seem desirable that every example subjected to a complete pathological examination should be placed on record. I therefore venture to briefly relate the following case, which some little time since I had the opportunity of investigating.

Atheroma of the coronary arteries; myomalacia cordis; hæmorrhagic infarction; rupture; hæmopericardium; syncope; epileptiform convulsions; death.—An old man about sixty-eight years of age was brought to the Manchester Royal Infirmary in an unconscious condition. He was admitted under the care of Dr. Leech, to whose kindness I am indebted for permission to record the case.[15] The patient's friends stated that he had been at his place of business as usual all day. He had, however, complained of feeling unwell. In the evening he went out into the back-yard and was found shortly afterwards on the ground in an unconscious condition. He was immediately brought to the accident-room of the Infirmary, which he reached some ten minutes after being found. He had during the previous six months had two or three fainting attacks. His memory had been deficient and his relatives had noticed that he had been somewhat strange in his conduct and peculiar in his manner for some time past. When first examined he was quite unconscious and lay perfectly still, breathing quietly. There was no paralysis, spasm, tremor, or rigidity. The pupils were equal, normal in size, and reacted to light. In about five minutes he began gradually to recover consciousness and was able very soon to speak. He complained of pain in his head and seemed somewhat dazed and disinclined for any exertion. He could, however, walk, although he was generally very feeble. His mental condition was peculiar, and it was deemed advisable to admit him as an in-patient. He slept well during the night and the next morning declared himself as feeling very well. All discomfort about the head was gone. There were no nervous symptoms. He was able to speak clearly and could answer questions, but he still showed signs of mental feebleness. The respiratory and digestive systems appeared to be normal. The cardiac dulness was not increased and on auscultation of the heart nothing abnormal could be detected except a slight accentuation of the first sound at the apex. The radial arteries did not appear to be markedly atheromatous. The urine was dark-coloured and of specific gravity 1018. It contained a fairly large amount of albumin, but no casts. During the day he appeared bright and cheerful and took his food well. About midnight he became restless and got out of bed and commenced dressing, saying that it was morning and he must go home. The following morning—that is, on the third day after admission, he seemed perfectly well and arrangements were made for his friends to remove him. Soon after midday he quite suddenly had a "fit" somewhat of the nature of an epileptic seizure. Convulsive spasmodic movements occurred in the right hand and arm. The mouth was drawn to the left side and the right side of the mouth moved very little. He was quite unconscious and the breathing was stertorous. His hands were cold and no pulse could be detected at the radials. In about ten minutes the stertorous breathing was replaced by irregular shallow gasps, the interval between which became progressively longer until death occurred a few minutes later. On auscultation over the cardiac area just before the last respiration no cardiac sounds could be heard. The pupils at the commencement of the attack were markedly contracted, but later became slightly dilated and unequal.

Necropsy.—Forty-eight hours after death I made a post-mortem examination of the body. The following is an abstract of my report.[16] Externally the body was that of a well-formed, moderately nourished old man. The face was pale. The pupils were small and unequal, the right being a little the smaller; there was slight arcus senilis. There was extensive œdema of the chest wall, which was of a somewhat "solid" character; and also anasarca of the back, loins, buttocks, and back of the thighs, but little or none of the extremities. Rigor mortis was well marked. Internally the cavity of the pericardium was distended with recent blood-clot. The heart[17] was small and contracted. Along the postero-external border of the left ventricle blood-clot was slightly adherent to the visceral layer of the pericardium. On gently separating it a small, irregular, blood-infiltrated area was exposed and in it a small rupture. The ventricular wall at the point of rupture was very much softened, exceedingly friable, and of a dark brownish-red colour. The necrotic area appeared to be infiltrated with blood and extended almost from the endocardium to the rent in the pericardium. The whole of the myocardium forming the left ventricle was unduly soft and flabby. The cavities, orifices, and valves of the heart appeared fairly healthy. There was, however, slight induration and fenestration of the aortic cusps. The coronary arteries were extremely atheromatous, especially the branches supplying the left ventricle. These were much calcified and seemed practically occluded. The aorta was extremely atheromatous; no aneurysm was present. The pleuræ were congested and there were large areas of pleuritic fibrosis over the apices of both lungs, which were congested and very œdematous; there was no tubercle or hæmorrhage. As regards the abdomen the peritoneum was normal. The gastro-intestinal tract was congested. The liver, which was enlarged, weighed fifty ounces, and was slightly congested and fatty. The gall-bladder was normal, and the pancreas was congested. The kidneys were slightly enlarged, weighed four and a half ounces

[1] De la Rupture Spontanée du Cœur. Archives Générales de Médecine, 1871.

[2] Lehrbuch der Pathologischen Anatomie, Band ii., s. 112.

[3] Ueber die Spontanen Rupture des Herzens. Archiv der Heilkunde, Band iv., 1863, s. 502.

[4] Sudden Death due to the Heart. Boston Medical and Surgical Journal, 1893, p. 457.

[5] Thèse Inaugurale, Paris, 1858.

[6] Traité d'Anatomie Pathologique, tome ii., 1881.

[7] Thèse de Paris, 1873.

[8] Zeitschrift für Klinische Medicin, Band vii., s. 459.

[9] Zur Entstehung des Hämorrhagischen Infarctes. Beiträge zur Pathologischen Anatomie, von Ziegler und Nauwerck, Band i., Heft 1, 1884.

[10] Ueber Spontane Ruptur des Herzens durch Verschluss der Coronararterie und Hämorrhagischen Infarct des Herzmuskels nebst Bemerkungen über die Genese Hämorrhagischer Infarcte. Beiträge zur Pathologischen Anatomie und Klinischen Medicin, Wagner, Festschrift, 1888.

[11] Diseases of the Muscular Walls of the Heart. THE LANCET, 1872, ii., p. 460, and Quain's Dictionary of Medicine.

[12] Cases of Spontaneous Rupture of the Heart and Remarks on the Pathology of the Condition, with special reference to Fatty Degeneration and Diseases of the Coronary Arteries. Glasgow Medical Journal, vol. ii., 1884, p. 413. Lectures on Fibroid Degeneration and Allied Lesions of the Heart and their Association with Disease of the Coronary Arteries. THE LANCET, Dec. 10th, 17th, 24th, and 31st, 1887.

[13] Pathological Anatomy: special, part ii., p. 45. MacAlister's English translation.

[14] Those interested in the subject will find useful references in the Index Catalogue of the Army Department at Washington, U.S., and in the Index Medicus, vols. i. to xvii., 1879 to 1895. A guide to many of the English cases will be found in the Medical Digest, by Richard Neale, M.D., third edition, 1891, and in the Transactions of the Pathological Society of London. Useful references are also given by Petit, Traité de Mélecine, Charcot, Bouchard, Brissaud, tome v., Maladies du Cœur, p. 134; Jaboulbène, Anatomie Pathologique, 1879, p. 572; and by Schrutter, Ziemssen's Cyclopædia of the Practice of Medicine, English translation, 1876, vol. vi., p. 259.

[15] For much of the clinical details I have to thank the then house physician, Dr. Coutts.

[16] Manchester Royal Infirmary Post-mortem Reports: Medical Vol. 1893, p. 62, No. 20.

[17] The specimen was shown at the Manchester Pathological Society and has been added to the pathological collection of the Owens College, No. 1882.

each, were a little granular, and the capsule was somewhat adherent; a large simple retention cyst was observed in the right organ. The ureters were normal, and the bladder was distended with urine. The prostate was not appreciably enlarged, and the testicles were apparently normal. The dura mater was adherent to the skull-cap, the vessels were congested, and there was slight subdural hæmorrhage along each side of the falx cerebri. The pia-arachnoid was congested; there were no hæmorrhages. The brain was congested and slightly œdematous; no hæmorrhages were present; there was a small patch of softening at the posterior border of the right lobe of the cerebrum. The cerebral vessels were extremely atheromatous.

Microscopical examination.—The ventricular wall at the seat of rupture was carefully hardened in alcohol, embedded in celloidin, and sections cut by means of a freezing microtome. A large number of preparations both stained and unstained were subjected to examination. The chief changes were briefly as follows. The muscular fibres stained badly, they had a more or less homogeneous appearance, and their nuclei and striæ in many places had disappeared. They were much broken up and separated by an extensive infiltration of blood. Between and in parts displacing the necrotic muscular elements was a fibrinous-like network with blood corpuscles. In some parts the corpuscles were not distinct but formed a mere granular structureless mass. The affected portion extended right up to the pericardium. Leucocytes infiltrated more or less the whole area, but were especially abundant at the borders of the hæmorrhagic parts. The branches of the coronary arteries in the sections were practically obliterated.

In the above case a progressive atheromatous arteritis of the coronaries, especially of those branches supplying the left ventricle,[18] seemed to have led to a localised softening—a condition of myomalacia—and the vascular obstruction finally becoming complete a so-called hæmorrhagic infarct had resulted, with final rupture through the necrotic and blood-infiltrated area.

Spontaneous rupture of the heart has been well known for very many years as a possible cause of sudden death, as is clearly indicated by the writings of such early observers as Sallzmann,[19] Mummsen,[20] Portal,[21] Pohl,[22] Rostan,[23] Rochoux,[24] Quain,[25] and Stokes;[26] but the extremely important part played by diseased coronary arteries in initiating pathological processes has only been fully appreciated of late years and in great measure through the work of such pathologists as Cohnheim,[27] Bezold,[28] Samuelson,[29] Mott,[30] and Wild.[31] Weigert[32] seems to have been one of the earliest to draw attention to the conditions leading to cardiac infarction. A healthy heart probably never "breaks." Rupture other than when the effect of traumatism is always preceded by pathological changes in the myocardium. In by far the majority of cases such changes, I believe, are the direct outcome of morbid processes in the coronary arteries. The seat of the rupture and the time of life when it is most usually met with also to some extent support this view. As Fagge,[33] Ollivier,[34] Böttger,[35] and others have pointed out, the seat of rupture is almost always in the left ventricle. The patients are usually advanced in life. In fifty cases collected by Böttger thirty-four were over sixty years of age. George II. is said to have died from ruptured heart at seventy-six. While, however, diseased coronaries may undoubtedly lead to rupture, one is bound to admit, after an examination of a considerable number of cases, that extensive changes, usually of an atheromatous nature, and often more or less localised, may be visible in the coronary arteries without any apparent change in the myocardium. Certainly in some such cases sudden death does occur. The investigations of Welch,[36] Steven,[37] Sternburg,[38] and others seem to suggest that possibly these vessels are capable of freer anastomosis than has generally been thought to be the case. It is important from a medico-legal point of view to remember that death is not always instantaneous in rupture of the heart. The present case is a striking example. The rapidly developing œdema and the epileptiform attack formed points of considerable clinical interest, which tended rather to confuse than to aid diagnosis.

Manchester.

[18] Sternburg (Ueber Erkrankungen des Herzmuskels in Anschluss auf Störungen des Coronararterienkreislaufes. Dissertation, Marburg, 1887, quoted by Councilman), as the result of injection experiments, finds that a large portion of the right auricle, the entire posterior part, and a large portion of the anterior part of the right ventricle, a large part of the inter-auricular and the inter-ventricular septum, the posterior part of the left ventricle, and the posterior papillary muscles are all supplied by the right coronary artery; while all other portions of the heart are supplied by the left.

[19] Dissertatio de Subitanea Morte a Sanguine in Pericardium Effuso, 1731.

[20] Dissertatio de Corde Rupto. Leipzig, 1764.

[21] Sur des Morts Subites par Rupture du Ventricle Gauche. Mémoire de l'Académie Royale des Sciences, 1784.

[22] De Ruptura Cordis. Leipzig, 1808.

[23] Mémoire sur les Ruptures du Cœur. Nouvel Journal de Médecine, Paris, 1820.

[24] Des Ruptures du Cœur. Thèse de Paris, 1822.

[25] Transactions of the Royal Medical and Chirurgical Society, 1850.

[26] Diseases of the Heart and the Aorta. Dublin, 1854.

[27] Cohnheim und Schulthess-Rechberg. Ueber die Folgen der Kranz-Arterien-Verschliessung für das Herz. Virchow's Archiv, Band lxxxv., p. 502, 1881.

[28] Untersuchungen über die Herz- und Gefässnerven, Wurzburg, 1867; and Medicinisches Centralblatt, 1867, p. 382.

[29] Zeitschrift für Klinische Medicin, Band ii., s. 12; and Virchow's Archiv, Band lxxxvi.

[30] Cardio-vascular Nutrition and its Relation to Sudden Death. Practitioner, 1888, vol. ii. p. 161.

[31] A Contribution to the Pathology of the Coronary Arteries. Medical Chronicle, 1892, vol. xvi., p. 223.

[32] Virchow's Archiv, Band lxxix., s. 106, 1880.

[33] Principles and Practice of Medicine.

[34] Dictionnaire de Médecine, tome viii.

[35] Archives der Heilkunde, 1863. Quoted by Councilman: Boston Medical and Surgical Journal, 1893, p. 461.

[36] Johns Hopkins Hospital Bulletin, vol. ii.

[37] THE LANCET, Dec. 10th, 17th, 24th, and 31st, 1887.

[38] Dissertation, Marburg, 1887.

THE INFLUENCE OF SUBSOIL-WATER ON HEALTH.[1]

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[IN the introductory portion of his interesting paper Dr. Copeman referred to the general principles governing the movements of subsoil-water, and described the various methods by which its fluctuations are determined. In this connexion he suggested the desirability of devising an apparatus by which the movement of subsoil-water may be automatically and continuously registered. After dealing with the subject of cholera and discussing Pettenkofer's well-known views thereon, Dr. Copeman proceeded.]

Typhoid Fever.—Typhoid or enteric fever is another disease which has for a considerable time past been believed by observers in different parts of the world to have some causal relationship with varying levels of the subsoil-water. Thus, although no pronounced relation could be found between the death-rate and the temperature or putrefactive activity of the soil, Fodor has demonstrated an apparent close connexion between the typhoid curve and one representing variations in the level of the Danube, both these curves, almost without exception, rising and falling together. Thus at the beginning of 1872, both of these curves rose simultaneously, attained their acme in the middle of the year, and then both fell off in a like manner. In this connexion it must be remembered that the level of the Danube exerts a very regular influence on the ground-water level throughout the greater part of the town, and thus it would appear that in Budapest typhoid fever is most commonly related to a rising level of the water in the soil. In Munich, where Buhl applied the observations of Pettenkofer on cholera to the incidence of typhoid fever, and in Berlin, on the other hand, the reverse phenomenon has been recorded, the disease in both places increasing as the ground-water falls. This latter state of things has been referred to a more active decomposition of organic material in the more superficial and polluted layers of the soil following on the abstraction of a certain amount of water from the earth, and possibly this explanation may be correct as regards Berlin, where outbreaks most commonly occur in autumn. In Budapest, however, as already stated, the disease is usually more prevalent in winter and spring, and seeing that there is often so close a connexion of epidemic enteric fever with variations in level of the ground-water we may, perhaps, infer that it is there influenced to a certain extent by processes going on in the deeper layers of

[1] A paper read at a Sessional meeting of the Sanitary Institute, held in the Parkes Museum on Feb. 12th, 1896.

the soil, those layers, indeed, in which the rise or fall of the ground-water is felt.

Liebermeister and Buchanan, with considerable reason, have supposed that soil-water observations simply illustrate the communication of the disease by means of drinking-water, the water of surface wells being generally more impure when the level of the soil-water is persistently low, when also there will be more likelihood of noxious matter accumulating in the stagnant water in the soil. Baldwin Latham states that in this country the disease is most prevalent after a dry period, when the first wetting of the ground, or percolation from any cause, takes place and, again, that typhoid fever is always more rife while the waters are rising in the ground then when they begin to diminish. And in this connexion he refers to Dr. Buchanan's report on an outbreak of typhoid fever at Croydon in 1875, from which it appears that the outbreak, which attained considerable intensity in April of that year—a most unusual period—occurred almost coincidently with a rise of the ground-water, which rise had been delayed to a much later period than usual. Again, in a report by Dr. Thorne Thorne relating to an outbreak at the village of Terling in 1867-68—involving no less than 203 persons out of a total population of 900—it is mentioned that all the wells in the village had become dry previously to the outbreak of fever and the disease made its appearance at a time corresponding to the first replenishment of the water in these wells. In the annual report of the Michigan State Board of Health for 1884, Dr. Baker, as the result of a long series of observations, concludes that, in Michigan at least, the prevalence of typhoid fever shows a very close relation to the height of water in wells, the disease increasing in inverse proportion to the height of the ground water. This relationship he found to be most marked in the second half of the year, the two curves of height of earth above water and of typhoid fever incidence following the one on the other with only such small delay in the typhoid fever curve as may, he thinks, be fully accounted for by the period of incubation. In the first half of the year, however, a difference is observed according as whether the surface of the earth is frozen or not. Thus he says, "with the advent of colder weather there is a rise in the water level which is uniformly followed by a decreased prevalence of fever; this decrease continues through the winter and spring even though the level of the well-water is lowered, provided the surface of the earth is deeply frozen. On the contrary, high water level in wells in winter and spring coincident with ground not thoroughly frozen, is followed by prevalence of the fever." Dr. Baker agrees then with Pettenkofer's view that there is a causal relation of low ground-water and increase of typhoid fever, but, unlike the latter investigator, he puts a somewhat different interpretation on the observed facts in believing that the cause of the fever most frequently enters the body through the medium of the drinking-water.

Diphtheria.—In a series of papers contributed to THE LANCET in 1878 Dr. Thursfield gave expression to his opinion that diphtheria—at that time essentially a disease of rural districts otherwise the most healthy as indicated by the fever death-rate—was intimately connected as regards local conditions with structural dampness of habitation. That structural dampness of dwellings is a most important factor in the development of diphtheria is now generally admitted, such a condition being most favourable for the incidence and severity of the affection and the persistent vitality of the germ of the disease.

As Dr. Thursfield has pointed out this dampness of houses may depend on the subsoil-water being so close to the surface that the cellar always contains more or less water or upon the house being built upon a retentive clay without the precaution having been taken of providing a damp-proof substratum, but even more frequently upon the house being deeply embedded at the back or slightly all round. Although dampness of site is undoubtedly a factor in the production of outbreaks of diphtheria, particularly if such dampness be due to persistent leakage from imperfect sewers or cesspools, it is only comparatively recently that we have obtained proof of any direct relation between the occurrence of an epidemic and a rise or fall of subsoil-water. Mr. M. Adams, by his researches carried out at Maidstone during the last ten years, has placed at our disposal a continuous series of observations of the range of movement of the ground-water, together with a concurrent record of the rainfall, barometric pressure, and incidence and mortality rates of diphtheria, which cannot fail to be of great value in the elucidation of this subject. This series of observations are of more interest because when commenced in 1884 Mr. Adams had, as he states in a paper read at the Hygiene Congress held in London in 1891, no preconceived ideas as to the results which he expected to obtain from them, although, as he adds, the hope was always entertained that very probably something of a practical value in course of time might issue therefrom. From the first three and a half years during which his daily observations were recorded the district of which he is medical officer of health was practically free from diphtheria, but at the beginning of 1888, what afterwards proved to be a serious and prolonged epidemic of diphtheria first made its appearance, from which time to the present it has continued with occasional intermissions. Mr. Adams in his annual report for 1889 and in later papers calls attention to the fact that his records of subsoil-water fluctuation for the first three years during which they were kept show a striking similitude to one another, each of these three years having a well-marked high tide during the cold season, and an equally well-marked low tide during the hot season, the transitions, moreover, being gradual. In contrast with this, during the four succeeding years 1888-92 the tides were almost completely lost, being replaced by irregular and often abrupt oscillations of an indefinite and limited character, often so altered in respect of time that high tides appeared when, as the result of the records of previous years, low tides were expected and *vice versâ*. Moreover, the range of movement of the subsoil-water, which was greatest in 1885, became very considerably reduced during the next four years, after which it again gradually expanded, although by this time the range was about a higher average level. Almost contemporaneous with the commencement of these remarkable variations from the apparent normal as previously established an outbreak of diphtheria made its appearance, which with occasional slight exceptions showed during succeeding years first a rise and later a fall in intensity after the cyclic fashion to which Dr. Whitelegge has recently called attention. Mr. Adams claims that his records show during the whole period over which they extend a strict concordance between soil-dampness and diphtheria on the one hand, and absence of diphtheria and soil-dryness on the other hand, the disease reaching its acme of virulence when stagnation of the subsoil-water is most complete. He contends, moreover, that his observations further demonstrate the fact that the *quality* as well as the *quantity* of the disease varies in obedience to the circumstances concerning the subsoil-water, there being an agreement in the inverse ratio between the case mortality from diphtheria and the range of the movements of the subsoil-water.

Phthisis.—It is to the concurrent though entirely independent labours of Bowditch in America and of Buchanan in this country that we owe the discovery of a connexion between soil-dampness and the phthisis death-rate. The Registrar-General for Scotland, in his seventh annual report, referred to the fact that a similar relationship, as evidenced by the phthisis mortality statistics in Scotland, appeared to hold good for that country also. The remarkable freedom from consumption of the Cape of Good Hope and South Africa generally, as also of Egypt, as compared with the relatively high mortality from it in the moist climate of Great Britain, is a fact which points in the same direction, and hence we may, I think, fairly consider the proposition affirming a close relation between tuberculous disease and moisture of locality to be of practically universal application. Appreciation of this relationship came about in the case of the late Sir George Buchanan's investigations from an inquiry undertaken by him in 1865-66 with the object of ascertaining what had been the results obtained by local authorities who by means of such works as water-supply and sewerage had attempted to improve the sanitary condition of the districts under their control. In many of these towns reported on it was found that the laying of main sewers had brought about a permanent lowering of the subsoil-water and that this had in turn been followed by diminution, more or less considerable, of phthisis, the reduction from the previous rate ranging, among the first fifteen towns, from 11 per cent. at Merthyr to 49 per cent. in Salisbury.

It will be seen that as regards this particular disease the question is not one merely of variations in the level of the ground-water so much as a considerable and permanent lowering of its level. A certain amount of opposition has, however, been afforded to these views, notably by Dr. Charles Kelly who, in his report for 1879, on the Combined Sanitary District of West Sussex, has thrown doubt on these conclusions, basing his statements on certain data collected within that rural area. He there states that, although the phthisis

death-rate had been distinctly lowered during immediately preceding years, there had been no contemporary improvements in the system of drainage of the soil to account for the alteration. Dr. Thorne Thorne, on the other hand, has indicated that the large amount of agricultural drainage which had then already been effected throughout the kingdom had been of a sort to produce a similar result in rural districts to that brought about by sanitary drainage in towns, and he at the same time calls attention to the fact that Dr. Kelly offers no explanation of the striking and definite relation shown by Buchanan to have existed between the amount of the diminution of the phthisis death-rate and the extent and permanence of the lowering of subsoil-water. In the same report Dr. Kelly states his belief that a number of changes social as well as sanitary, including among them the improved state of the cottages, the rise of wages leading to the children being better clothed and fed, and the increase in railway communication, which tends to diminish intermarriage of population, have all had their share in the undoubted improvement which has taken place. In a later report (1887) Dr. Kelly again returns to the subject and gives a series of comparison tables for the ten years 1876–86 relating to the combined district of West Sussex. He first classifies the different soils into three classes: (1) the pervious soils; (2) the retentive soils; and (3) the moderately pervious soils; and appends a table showing the various death-rates on these different soils, the figures in which appear to show that the mortality from lung diseases varies considerably, being much higher on retentive than on porous soils; while the mortality from what is now registered as phthisis and from all causes is very nearly the same on each variety of soil. It should be remembered, however, that in this West Sussex district, as indeed throughout England, there has been a great reduction in the mortality from phthisis since Buchanan's inquiry into the subject for the decade 1851–60. Moreover, the assumption runs through all Dr. Kelly's arguments that the relative wetness of soil in the six registration districts with which he is concerned remains in later times as it was in 1851–60. What his statistics may be taken to show is that all the varieties of soil being now healthy, the cause of the deaths from phthisis which still occur has to be sought for in some other direction. No evidence is adduced on this point, nor is the operation of sanitary measures upon the soil in the several districts dealt with. In his Sixth Annual Report (1879), indeed, it is stated that there has been "no change whatever in the drainage" of these rural districts, but this statement is too bald to be of much import. The assumption, too, pervades his argument that soil wetness is *the* cause of phthisis, whereas all that has ever been claimed for it in this connexion is that it is *a* cause.

Diarrhœa.—The researches of Dr. Ballard and of Dr. Tomkins have demonstrated the fact that a definite soil temperature plays an important part in the etiology of this disease. So clear, indeed, has such relationship of cause and effect been considered in many quarters that those who are interested in sanitation are apt altogether to overlook the possibility of variations in the level of the subsoil-water playing some part in the matter. It has, I think, been shown very definitely that the temperature of the atmosphere at any given time itself plays no part in the series of events leading to an epidemic of diarrhœa other than that comparatively slight influence which it exerts on the range of the subsoil temperature. Thus Mr. Baldwin Latham has put on record the fact that while the average temperature of the air at Croydon in 1854 for the months of June, July, and August was 59·4, and for the same months in the following year it was 16 1, yet in 1854 the deaths from diarrhœa were over five times as numerous as in 1855.

It is obvious that in the absence of some disturbing element the temperature of the upper layers of the soil must be dependent on that of the atmosphere above, the only difference being that the maximum and minimum points are more and more delayed and that the total range is gradually diminished as a greater distance from the surface is reached. If, however, the soil be saturated with moisture it will not heat as rapidly as if it were comparatively dry, and consequently an average atmospheric temperature, which when the soil is dry would be sufficient to bring up the soil temperature to that point which is necessary for the development and maturation of the germ of the disease, will by no means exert a similar influence when the soil is wet. In this way is probably to be found the explanation of Mr. Baldwin Latham's observation that diarrhœa is apt to be more prevalent when the subsoil-water is low. As I have endeavoured to show, however, this in no way militates against, but rather tends to support the proposition, so ably expounded by Dr. Ballard, to the effect that whatever the air temperature may be diarrhœa does not appear in epidemic form until a definite temperature is reached at a given depth below the surface of the soil. Snow has also shown that in the city of Buffalo cholera infantum is much more prevalent in a dry than in a wet season, and he suggests that this is probably due to the fact that in a dry season the temperature of the soil would be likely, other things being equal, to reach a higher point than in the opposite case. This same fact has been insisted on by Fodor, who states, as the result of his experience, that an exceptional rainfall occurring in the midst of even the most violent epidemic will be followed after from eight to ten days by a large reduction in the death-rate, but that on cessation of the rain the disease may assert itself afresh. The results of Mr. Power's investigations at Leicester are also in harmony with this statement.

Certain other diseases there are which at one time or another have been deemed to depend on wetness of the soil for development of their full activity. Some, however, such as malaria, for instance, are fortunately at the present day practically unknown in this country since the draining of the Fenlands was carried out, except when introduced from without, while in the case of others, such as small-pox, scarlet fever, measles, whooping-cough, neuralgia, and rheumatism, the evidence connecting their epidemicity with particular conditions of the subsoil-water is at present too scanty to permit of any trustworthy inference being drawn therefrom. A survey of all the recorded work on the influence of subsoil-water on health appears, then, to show that rapid and abnormal oscillations of the level of the subsoil-water are particularly dangerous, such variations being of considerably greater importance than the actual distance of the ground-water from the surface. Other things being equal, it is doubtless true that the further the ground-water from the surface the healthier will be the site, although in all probability a higher average level without obstruction to the outflow will not necessarily be more conducive to the appearance of disease so long as the height is not such as to bring about more or less permanent dampness of dwellings.

As I have already stated it would appear that, with the exceptions, perhaps, of cholera and typhoid fever, the condition of the upper layer of the soil as regards the amount of moisture in its interstices is of more importance than the actual level of the ground-water beneath. Nevertheless, observations of the variations of such level will afford some index of the amount of moisture in the overlying soil, although an almost equally important factor in the regulation of this condition must be sought in the extent of the rainfall. There are, then, two different phases of subsoil-water variation, either of which is conceivably capable of bringing about such a state of soil-moisture (short of saturation) as might be expected to aid in causing an increased multiplication of organisms in the soil. These are either (*a*) a sudden fall of ground-water after a rise, or (*b*) a rise after a previous condition of low level—particularly if happening at times when such phases do not ordinarily occur. More especially will this be the case if at such period the temperature of the upper layers of the earth is high and the soil contains much material of an organic nature. In the light of Dr. Ballard's researches on diarrhœa we have reason for supposing that the optimum temperature for multiplication of pathogenic organisms in the soil obtains when the thermometer reaches somewhere about 56° F. at a distance of four feet from the surface.

It appears to me, therefore, that in order to fully elucidate the relationship of subsoil-water to disease, it is in the first place highly desirable that an extended series of observations should be carried out simultaneously at as great a number as possible of stations in different parts of the country. In addition, concurrent observations should be made as far as is practicable of (1) the temperature of the soil, (2) of the organic matter present, and (3) of the amount of soil-moisture; all these at depths of one foot and four feet from the surface respectively. Last, but by no means least, accurate record should be kept of the air temperature, of the barometric pressure, of rainfall, and of frost, these last two factors having special importance in relation to distribution of soil-air currents into houses through the sealing of the surface of the ground.

CONSIDERATIONS ON CHOLERA IN EGYPT IN RELATION TO SOME ALTERATIONS OF THE INTESTINES.

BY P. SONSINO, M.D. PISA,
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IN a special article in THE LANCET of June 6th reference is made to the present epidemic of cholera in Egypt, especially as regards the insanitary condition of the towns and villages of that country, and particularly of Alexandria, and also the various conflicting interests, the fanaticism, &c., which render useless any actual and rational attempts to stamp out the epidemic. It is certainly admitted by all the best hygienists that the only means to oppose an outbreak of cholera or the spread of it, so as to keep it from becoming epidemic, is to put the country in a better hygienic condition in every respect, and especially to better the conditions of sanitation respecting excreta. When these conditions are at fault it is not possible to obtain any good result during the continuance of an epidemic. In the same manner it is impossible for any able and brave general to gain a victory if his men are not previously prepared to sustain the battle. Measures such as quarantines, lazarettes, segregation, and even destruction of the germs—partly from the difficulty of their application, especially in a mixed and not uniformly ruled population and partly from the opposition exhibited by an ignorant and fanatical population—as THE LANCET rightly observes, are after all insufficient, as the germs are too subtle either to stop at the borders of a country or to be destroyed totally, whenever they have been already introduced. India, the birth-place of cholera, has taught all this, and it is desirable that its teachings should be understood and utilised by the rest of the world better and more completely than they have been up to now. But for Egypt there are some special sources of danger from cholera that claim the special attention of those that rule sanitary matters, and I think it useful to recall them to the attention of the readers of THE LANCET, as it seems to me that they are altogether overlooked at present by the sanitary authorities of that country. We cannot say as a general statement that Egypt is disposed to cholera more than any other part of the world. Nay, if we judge from all that has happened in this last half century, and considering that Egypt is on the high road between India and Europe, we may say that cholera appears to attack Egypt rather with less frequency than many other Mediterranean countries. Indeed, if I remember well, Egypt in this second half of the present century has had only three epidemics of cholera besides the present one. And this last (1895–96) began twelve years after the previous one of 1883, whilst in that interval of time cholera had ravaged other Mediterranean countries without extending to Egypt. But if Egypt is not predisposed more than other countries to the attack of cholera, yet it is ravaged by its outbreaks with more vehemence and greater death-rate than many other countries perhaps more frequently attacked. It suffices to remember that cholera in 1865 destroyed there no less than 60,000 people, and in 1883 50,000 people, in a space of three months.[1] Now it is a good rule on studying an epidemic to take into due consideration not only the influences that act generally everywhere, but to inquire which are those special influences which modify in each particular country the general influences and give particular features to an epidemic. Besides the generally bad hygienic conditions of Egypt upon which the article in THE LANCET has dwelt there are some peculiar conditions of that country which, I think, explain well why cholera epidemics in Egypt are so widely spread and produce so much mortality amidst the native population. Before all I would mention a condition that is not entirely peculiar to Egypt—namely, the presence of a great river, which is the only source of the water supply for drinking and all other purposes for the entire population. Lord Cromer's latest report to the Egyptian Government affords many reasons for hoping that this noxious influence may be done away with in the near future, and he expresses a wish that a new supply of water may be afforded everywhere to the country by the construction of artesian wells, which will give a water quite pure from micro-organisms. But apart from this detrimental influence of the polluted water of the river, from which only the well-to-do class of Europeans can exempt themselves by boiling the water, and which from many causes cannot be wholly at once suppressed during the continuance of the epidemic, we have in Egypt another more peculiar influence that I think plays a great part in producing a widely spread morbidity and mortality from cholera among the native population. This deleterious influence is exercised by the previous morbid conditions of the intestines of the larger number of the natives in Egypt, due to the effects of dysentery, bilharzia, and ankylostoma, and other intestinal worms, which favour greatly an attack of cholera and its fatal issue. Cholera in fact is a disease that, like several other infectious diseases, begins from the *primæ viæ*. The introduction of the comma bacillus (at present the recognised cholera-producing germ) is made only by the way of the mouth; its seat is the intestines; the first pathological alterations due to cholera are in the walls of the intestines only; cholera is thus in its beginning an intestinal disease only and the alteration and disorders of its subsequent stages are not the direct effect of the comma bacillus, since cholera bacilli are not present either in the blood or in any of the tissues of the body except the intestines (Macnamara), but only the effects of toxins that are produced by the same bacillus. Now the conditions of the stomach which render this viscus unable to destroy comma bacillus, as it is by the healthy gastric secretion and the states of the intestines which facilitate the multiplication of the comma bacillus and its penetration through their walls, are the peculiar conditions which to my mind appear to favour an attack of cholera and aggravate it in the native Egyptians. These conditions are set up by special changes, as chronic catarrhs or inflammations, with solutions of continuity that are produced in different parts of the intestines by bilharzia, ankylostoma, rhabdonema, and by other intestinal worms and especially by dysentery. It is true that the part of intestine more generally attacked by cholera bacillus is the ileum, whilst ankylostoma and rhabdonema attack rather the first part of the small intestine and bilharzia and dysentery the entire large intestine; but when a process of inflammation has existed for a long time in any part of the intestine it is certain to affect the functions of the neighbouring part of the same viscus, so that everyone that already suffers or has suffered from intestinal disorders may *a priori* be supposed to be more exposed to an attack of epidemic cholera and to be more in danger than any individual that has not so suffered.

In an account that I have given of the epidemic of the cholera of 1883[2] in Cairo I mentioned cases in which severe lesions of the large intestines due to previous dysentery have been found associated with those of the small intestine due particularly to cholera, and I spoke of the frequency of bilharzia and ascaris found in the dead bodies of the cholera patients. In the same manner I found a great number of different species of worms in the bodies of horses that died from the severe epizootic of 1876 in Egypt,[3] and I then entertained the idea that the disease was not caused by the worms, but that this parasitism, by diminishing the resistance of the organism, predisposed to the attack of the epizootic disease and to the fatal issue of it. It then follows that if the natives of Egypt were not beforehand affected by those intestinal alterations due to the presence of worms or to dysentery, which now some pathologists consider to be caused by amœbæ, the epidemic of cholera in Egypt would probably be less extensive and less productive of large mortality. But in view of diminishing the zoo-parasitic diseases in Egypt it would be necessary to begin with appreciating more their importance, to instruct more accurately about them the old and new native sanitarians of Egypt, and to institute a special board attached to the sanitary department for contriving rules of sanitation and enforcement of them throughout the country. The want of this is a special defect in the sanitary institutions of Egypt, to which due attention has been not yet given by the rulers of the country. Indeed, just lately we have seen that for the choice of the pathologist at Kasr-el-Aini Hospital they

[1] See Macnamara on Cholera in Davidson's Hygiene and Diseases of Warm Climates. Edinburgh: Y. J. Pentland. 1893.

[2] Sul Cholera in Cairo d'Egitto nell' Anno 1883. Ricordi. Comunicazione fatta alla Accademia Medico-Fisica Fiorentina nella seduta del 13 Luglio, 1884. Pisa, 1884.

[3] On the Entozoa of the Horse in Relation to the late Egyptian Equine Plague. By P. Sonsino, M.D. Pisa. In the Veterinarian for February and March, 1877.

have only relied on the fact of his being a skilled bacteriologist, though quite new to Egyptian practice and experience, and a Sanitary Institute has been lately established, but with a staff which leads one to suppose that it will be a mere laboratory for bacteriological researches. Moreover, in the article of THE LANCET it is stated that the Egyptian Government has recently requested the Pasteur Institute to send a mission to Cairo to make experiments with a new anti-cholera serum. I suppose that this predilection for bacteriological studies and researches alone is not the fault of the present distinguished and enlightened chief of the sanitary administration, but it is to be ascribed to an erroneous interpretation of the value at present attaching to the pathological researches in some countries of Europe and to the misleading influence exercised by foreign scientists on the native governmental authorities of Egypt, who are too prone to follow European tendencies instead of adapting their conduct to the peculiar wants of the Egyptian people. Bacteriology has already too many able researchers in old Europe to want the special help of researches to be made in Egypt, where there is scarcely a special disease that falls in the domain of the bacteriologist which cannot be studied even better in any other country than Egypt. Indeed, taking a glance at the diseases which are ascertained or supposed to be originated by micro-organisms some are cosmopolitan and common also to all civilised countries, as tuberculosis, diphtheria, enteric fever, pneumonia, influenza, and so on; others exist in Egypt as well as in many other warm countries, but their frequency being much greater in the latter than in Egypt there is in such countries a better field for study than in Egypt itself in the case of diseases like lepra, ainhum, and beri-beri.

Of the great plagues of man, oriental pestis, or bubonic pestis, has not been for more than half a century seen in Egypt. Yellow fever has never been known in Egypt, and only cholera is still a periodical visitor, though, as I have said, not a frequent one. Perhaps of the diseases that in Egypt originate from micro-organisms only bilious fever claims particular attention as regards its importance, gravity, and the frequent occurrence of epidemics of it, while it is a disease peculiar to Egypt and other warm countries.

Elephantiasis, though its bacteriological origin has been sought, is, in some of its forms at least, certainly connected with filaria. The question as to whether or not dysentery is caused by amœbæ has still to be answered. Chronic diarrhœa, frequent among the natives, must be studied in relation to rhabdonema. Chyluria, chylous hydrocele, lymph scrotum, and other kinds of lymphorrhagia, all diseases very common in Egypt, are certainly caused by filaria in the vascular system which pours its embryos into the blood circulation. It is probable that more than one species of filaria sanguinis exist in Egypt, if not precisely in indigenous subjects, in many of the large number of individuals who come from Nubia, and probably those species that up to now are not indigenous in Egypt may become so in time for want of due attention to prevent their spread. Thus zoo-parasites offer special opportunities for study in Egypt, or rather in Africa, of which Egypt is the first representative, for its being older on the way towards civilisation. So if there is a branch of pathology that is worthy the attention of the rulers in Egypt for being cultivated in a special manner it is zoo-parasitology. The importance of this branch of medicine being considered in relation to the occurrence of epidemics of cholera, to whose extension, severity, and large death-rate these patients contribute, I cannot doubt the alterations that obtain in the intestines of a large number of natives, in consequence of having been subject to dysentery, bilharzia, ankylostoma, rhabdonema, which by themselves are already common or ordinary causes of morbidity and mortality in Egypt and in Africa, are an additional cause of mortality from cholera.

Pellagra, which from private information which I had from my friend Dr. Sandwith of Cairo, has been found lately to be rather frequent among the natives, is more likely to be a disease produced by an alteration of food of toxic nature than a bacteriological disease.

POPLAR AND STEPNEY SICK ASYLUM.—During the year ended last Lady Day, 3567 patients were admitted, 2934 were discharged, and 537 died; at the end of the year there were 735 remaining. In July, 1895, Mr. Charles Spurrell, F.R.C.S.Eng., was elected medical superintendent in succession to Mr. W. H. Pearce. New pavilions were opened last September. The average cost of each patient for maintenance was 6s. 5d. per week.

IS MITRAL REGURGITATION FROM VALVULAR DISEASE COMMON OR SERIOUS?[1]

BY THEODORE FISHER, M.D. LOND.,

PATHOLOGIST TO THE BRISTOL ROYAL INFIRMARY AND PHYSICIAN TO OUT-PATIENTS TO THE BRISTOL HOSPITAL FOR SICK CHILDREN AND WOMEN.

IT is well known that mitral regurgitation from valvular disease appears to be much more frequent at the bedside than the post-mortem room would lead one to suppose, yet there is possibly little idea in the minds of the majority of the practitioners of medicine how uncommon the examination of necropsy records proves it to be. Mitral regurgitation from valvular disease conveys the idea of leakage due to deformity of the flaps of the mitral valve, presumably mainly of the large anterior flap, since the posterior division is so small. Mere thickening of the flaps to a slight extent cannot be a lesion of sufficient importance to account for death, since there is no reason why thickening without deformity should lead to regurgitation. Moreover, in the reports of post-mortem examinations written by the inexperienced the word "thickening," as applied to the mitral valve, seems often to be an adjective suggested by the fact that the patient is known to have died from cardiac disease and that it is consequently thought that something wrong with one or another valve must be discovered. When, therefore, I speak of mitral regurgitation due to valvular disease it will be understood that I do not refer to such thickening but to actual deformity.

Before referring to the results of the examination of post-mortem records one or two clinical facts bearing upon the subject of mitral regurgitation may be considered. A systolic murmur heard at the apex of the heart we know may not uncommonly appear during a first attack of rheumatism, yet possibly we are not always justified in saying that endocarditis is present, or at least that the murmur is produced by an endocarditis that has caused deformity of the flaps of the mitral valve. Deformity must take some time to develop, yet so soon is the murmur sometimes audible that it seems far more reasonable to suppose that dilatation of the left ventricle has occurred. If in an attack of rheumatism in which a systolic murmur has been heard pericarditis supervenes and carries off the patient, we may find evidence on post-mortem examination of the existence of endocarditis in the presence of a row of fine, bead-like vegetations lining the flaps of the mitral valve, but the flaps themselves will be as well shaped and as supple as in perfect health. One can hardly suppose that the minute, bead-like bodies have interfered with the competency of the valve, and there is certainly no deformity that can have led to regurgitation. Although it is not easy to estimate small degrees of dilatation of the left ventricle in the post-mortem room, it is reasonable to conclude, in the absence of sufficient lesion of the flaps of the valve to give rise to a regurgitant murmur, that the dilatation present has been sufficient to occasion the murmur. Dilatation of the left ventricle occurring during attacks of rheumatism, while probably sufficient in amount to give rise to a systolic apex murmur, need not necessarily be so great as to give definite signs of its existence at the bedside. Yet there is one clinical fact that has some bearing upon this point. It is the frequency of a systolic murmur audible over the pulmonary area. The existence of this murmur (the frequent presence of which any not familiar with the fact may easily prove for themselves) can hardly be ascribed to endocarditis of the pulmonary valves. Minute bead-like bodies like those on the mitral or aortic valves may sometimes be found on the tricuspid and pulmonary valves in cases of death from rheumatic pericarditis, but they are rare, whereas the pulmonary systolic murmur is common. The small beads of rheumatic endocarditis one would also think to be too small to give rise to a murmur. Dr. Foxwell has given an admirable explanation of the pulmonary systolic murmur. He ascribes it to dilatation of the right ventricle mainly in the region of the conus arteriosus. My experience

[1] A paper read before the Bristol Medico-Chirurgical Society on May 13th, 1896.

bears out Dr. Foxwell's view, and in passing an example of this dilatation may be mentioned. In a necropsy upon a case of splenic anæmia in a young man over whose heart loud basic murmurs during life had been audible the dilatation of the right ventricle in the region of the conus arteriosus was so great that one might almost have said that an aneurysm was present. We have then a systolic murmur audible over the pulmonary area occurring in attacks of rheumatism, and we have reason to believe that this murmur is produced by dilatation of the right side of the heart. If this be allowed, then we may suppose that dilatation of the left side of the heart probably also occurs, and that a systolic murmur audible at the apex is not infrequently due to this dilatation. But if dilatation of the left ventricle, and not endocarditis producing valvular deformity, is the cause of a systolic murmur appearing during rheumatism, then it may be said that the murmur ought to disappear with the recovery of the patient. It seems to me that hospital patients are generally discharged before the heart has time to return completely to its normal condition, and consequently the disappearance of the murmur is not noted. I intended to look up several cases some time after they had left the hospital in order to see whether the murmur had disappeared. A paper, however, by Dr. Caton[2] seemed to render this work scarcely necessary. He treated several patients suffering from rheumatism, over whose hearts cardiac murmurs were audible, by rest in bed and blisters over the præcordial area. Forty patients were kept in bed on an average forty-one days, and in twenty-nine the murmurs disappeared. Dr. Caton attributes the disappearance of the murmurs to cure of the endocarditis by the blisters, but it seems far more reasonable to suppose that the prolonged rest in bed allowed dilated hearts time to recover, and the murmurs dependent upon this dilatation were consequently noted to have disappeared while the patients were under observation.

I have argued in part from points to be observed at the bedside that a systolic murmur indicating mitral regurgitation is commonly due to a dilated left ventricle and not to deformity of the mitral valve. I have referred also to the early post mortem appearances of endocarditis, and it is necessary to see whether the records of necropsies bear out the generally accepted view that the endocarditis terminates later in a deformity that occasions only regurgitation of blood through the mitral orifice. Examination of a large number of these records shows that death from uncomplicated mitral regurgitation may be described as rare. Thus, excluding cases in which other lesions were present such as general adhesion of the pericardium in children, and disease of the aortic valves, in twenty years of the Bristol Royal Infirmary post-mortem records there were only eleven cases of deformity of the mitral valve leading to regurgitation without any associated stenosis of the orifice, and ten years of the Guy's Hospital records gave only five cases, a fact briefly referred to in my paper on Hypertrophy of the Heart without Gross Organic Lesion.[3] But the rarity of deformity of the mitral valve leading to regurgitation through the orifice does not indicate that the flaps of the mitral valve do not suffer in consequence of rheumatic endocarditis. They undoubtedly become inflamed, yet the inflammation leads not to a puckering allowing merely regurgitation but to thickening and approximation of the flaps—in other words, to stenosis of the mitral orifice. Thus the above-mentioned collections of post-mortem records gave respectively forty-five and sixty-two cases of death from mitral stenosis during the same periods that there were eleven and five cases of mitral regurgitation due to valvular disease. It seems to me that attention to this point will probably show that mitral stenosis is the almost invariable result of inflammation of the mitral valve, and that cases, in which it may be at first thought that there is some deformity of the flaps leading to regurgitation, will on more careful examination prove to be examples of other forms of disease of the heart, possibly of the heart muscle. For example, a case may be mentioned that occurred only the other day in the post-mortem room of the Bristol Royal Infirmary. In a case of death from cardiac disease a moderately large heart was found with no kidney disease and no arterio-sclerosis to account for the enlargement. The edges of the flaps of the mitral valve were thickened, and I mentioned to those looking on that many observers would probably attribute death to regurgitation following valvular disease. It was also mentioned, however, that it was necessary to look further, and the first cut into the wall of the left ventricle in a plane horizontal to its surface exposed a fibroid patch measuring about one and a half inches by one inch. Other smaller patches were afterwards found, and the case was obviously one of fibroid disease of the heart. Whether, however, mitral valvular disease allowing uncomplicated regurgitation should or should not prove to have any real existence, there can be no doubt that mitral stenosis is far more common. The explanation of this fact appears to be that the inflammation produced by rheumatism affects mainly the fibrous structures of the valve. These fibrous structures pass from the ring at the base of the flaps to the attachments of the chordæ tendineæ, and from these attachments they are continued as the chordæ tendineæ themselves to the apices of the musculi papillares. When the fibrous structures become inflamed there is first new formation and afterwards contraction of the new tissue. The contraction exerts tension from the apices of the musculi papillares to the fibrous ring around the mitral orifice; the edges of the flaps are drawn together and later become adherent; the chordæ tendineæ also may not only be shortened and thickened, but may become fused together as the contraction brings them into contact.

Mitral stenosis the above statistics have shown to be the common sequence of rheumatic-endocarditis, affecting the mitral valve, and this lesion is a serious one, since the majority of cases end fatally before the age of thirty-five. It follows, therefore, that after an attack of rheumatism we shall look for clinical signs of obstruction of the mitral orifice as evidence of permanent disease of the valve that will in all probability sooner or later end fatally. If we are able after some length of time to exclude mitral stenosis, but a systolic murmur persists, it probably does not follow that a valvular lesion causing regurgitation exists. It is reasonable to suppose that some dilatation of the left ventricle occurring during an attack of rheumatism may become permanent. Yet the patient may suffer little or no inconvenience. We are all accustomed to the unexpected discovery of a systolic apex murmur in patients who present not even the slightest degree of cardiac failure. Sir Andrew Clark,[4] it may be mentioned, noticed during thirteen years no less than 684 instances of cardiac murmurs in private patients who presented no symptoms of heart disease. When there is a history of rheumatism in such cases it is customary to say that there is a lesion of the mitral valve, but that efficient compensation has taken place. I consider that such a conclusion rests upon insufficient evidence.

Clifton.

[2] Brit. Med. Jour., vol. i. 1896, p. 207.
[3] Guy's Hospital Reports, vol. li.

RESULTS OF M. HAFFKINE'S ANTI-CHOLERA INOCULATIONS.

BY ARTHUR POWELL, B.A., M.CH.,
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As a field for testing the value of inoculation the tea factories of India possess many advantages. The labourers being under contract, the after-history of those inoculated is easily followed up. Each morning the adults are paraded for roll-call, and all sick must attend hospital where a record is made of their disease and treatment.

In the *Indian Medical Gazette* for July, 1895, and May, 1896, will be found particulars of all cases of cholera occurring on those gardens under my personal observation, on which inoculation was performed by M. Haffkine or myself. The following tables summarise the results. With them are included statistics of Burnie Braes, which, though not under my care, were kindly communicated to me by the manager. A number of newly arrived coolies, who contracted cholera whilst still in quarantine or shortly after their arrival on the estates, are excluded from the tables. None of them or their fellows were inoculated, but they were attended by inoculated dressers and chaukidars during their illness. There is also excluded the case of a lad who contracted a fatal attack of cholera twenty-nine hours after. I

[4] Brit. Med. Jour., vol. i. 1887, p. 260.

had inoculated him with the primary vaccine. Cholera being rife in his village at the time, it is probable that when inoculated he was already in the incubation stage of cholera.

In the table is included as a death from cholera the following case at Karkuri. A native woman aged forty years received the primary inoculation only on Feb. 9th, 1895; was last seen by me on April 19th, 1895, apparently moribund from sloughing dysentery. Seven days later she was suddenly seized with violent pain in the abdomen, collapse, vomiting and some loose motions, dying in about an hour. The native doctor was absent on leave and by the time I heard of her death she had been already registered as a death from cholera and was so long buried that a post-mortem examination was out of the question. From the order of her symptoms I should certainly diagnose perforation of a dysenteric ulcer, but at M. Haffkine's request I have retained her case in the statistics.

TABLE I.—*Showing the Incidence of Cholera among Uninoculated and Inoculated.*

Place.	Uninoculated.			Inoculated.		
	Average population.	Cholera cases.	Deaths from cholera.	Average population.	Cholera cases.	Deaths from cholera.
Kalain	1088	45	26	1192	3	2
Kalaincherra ...	688	6	4	150	0	0
Duna	121	4	2	29	0	0
Sandura	454	2	1	51	1	1
Degubbet	248	12	9	404	3	0
Karkuri	198	15	9	443	2 (?)	1 (?)
My servants	2	1	1	12	0	0
Burnie Braes... ...	350	5	3	449	0	0
Total	3149	90	55	2730	9	4
Excluding the doubtful case ...					8	3

This gives an incidence per 1000 of the population—uninoculated, 28·57 cases, with 17·46 deaths; and inoculated, 3·29 cases, with 1·46 deaths; but excluding the probable case of perforation, the incidence among the inoculated was 2·92 cases, with 1·08 deaths per 1000—that is to say, that the mortality was either twelve or sixteen times as great among the uninoculated as the inoculated, and had the incidence been the same, the deaths among the latter, instead of being only 4, would have been 47.

The results reported by Simpson[1] in Calcutta, Silcock[2] at Bilaspur, and Hare[3] among the coolies on the Assam-Burma Railway are somewhat similar. I give them below in tabular form, with my own results and those in Gaya Jail,[4] after the fifth day from the time of inoculation.

TABLE II.—*Showing the Incidence of Cholera among Uninoculated and Inoculated as reported by Different Observers.*

Place or reporter.	Uninoculated.			Inoculated.		
	Population.	Cholera cases.	Deaths from cholera.	Population.	Cholera cases.	Deaths from cholera.
Gaya†	197	13	5	202	3	1
Bilaspur*	100	5	5	152	1	1
A.-B. Ry.	131	34	30	179	7	7
Simpson†	442	59	52	281	6	6
Powell	3149	90	55	2730	9	4
Total...	4019	201	147	3544	26	19

* After third day.
† After fifth day subsequent to inoculation.

The incidence per 1000 population is: uninoculated, 50·0 cases, with 36·57 deaths; and inoculated, 7·30 cases, with 5·36 deaths. Had the mortality been the same among the uninoculated and the inoculated, instead of 19 there would have died 129 of the latter.

The dose of virus used on those among whom my observations were made was larger than that used elsewhere. In almost all cases there was considerable febrile reaction. Of the last 500 inoculated by me only two failed to have fever, whereas in the East Lancashire Regiment[5] of 185 inoculated 66 had no fever, and only 2 had marked febrile reaction. In the same category I place the estates of Upper Assam, in reporting which Surgeon-Captain Hare says: "The dose was one-third that used in Cachar and Sylhet and the reaction produced by the inoculation was hardly noticeable."

TABLE III.—*Cases in which Small Doses were used*

Place.	Uninoculated.			Inoculated.		
	Population.	Cholera cases.	Deaths from cholera.	Population.	Cholera cases.	Deaths from cholera.
Upper Assam ...	6274	62	41	1955	22	7
East Lancashire Regiment	640	120	79	133	18	13
Total	6914	182	120	2088	40	20

Here the death-rate per 1000 uninoculated is 17·39. Among the inoculated 9·57.

The following observations of mine must also be recorded, though owing to the small proportion of those inoculated they have little bearing on the subject.

TABLE IV.—*Showing the Incidence of Cholera among Uninoculated and Inoculated.*

Place.	Uninoculated.			Inoculated.		
	Population.	Cholera cases.	Deaths from cholera.	Population.	Cholera cases.	Deaths from cholera.
Luba...	450	3	1	33	0	0
Craig Park	279	1	1	46	0	0
Jellalpur...	470	1	0	30	0	0
Total	1199	5	2	109	0	0

Of a similar character are the observations in the rest of Cachar and Sylhet,[6] in the 2nd Manchester Regiment, and among the British troops in Cawnpore,[7] less than one-fourth of the population being inoculated.

TABLE V.—*Observations where only a Small Proportion of the Population was Inoculated.*

—	Uninoculated.			Inoculated.		
	Population.	Cholera cases.	Deaths from cholera.	Population.	Cholera cases.	Deaths from cholera.
Above table	1199	5	2	109	0	0
Rest of Cachar and Sylhet	5404	12	9	1692	3	2
Military	1526	25	16	268	0	0
Total...	8129	42	27	2069	3	2
Per 1000	—	5·16	3·32	—	1·44	0·96

In the above tables are summarised all the observations in India—good, bad, and indifferent—hitherto published. They are not sufficiently numerous to base definite conclusions upon, but they hold forth strong encouragement for continuing the experiments on an extended scale. Unless we explain these results as a remarkable series of fortuitous coincidences—and he who has seen much cholera will not be startled by the most unaccountable vagaries of the

[1] Simpson: Memorandum to the Municipality of Calcutta, 1895; and Indian Medical Gazette, 1895 and 1896, passim.
[2] Silcock: Indian Medical Gazette, May, 1896.
[3] Hare: Ibid.
[4] Haffkine: Transactions of the Indian Medical Congress; and Report to the Government of India, Calcutta, 1895.
[5] Haffkine; loc. cit.
[6] Mason, Allen, and Haffkine, Indian Medical Gazette, 1896.
[7] Haffkine: loc. cit.

disease—we may conclude: (1) that the inoculations even in the largest doses hitherto used do not confer a complete immunity; (2) that a considerable degree of immunity seems to be conferred when the doses injected are sufficiently large to produce marked febrile reaction; and (3) that smaller doses confer little or short-lived protection, judging from the cases in the East Lancashire regiment and in Upper Assam.

NOTES ON THE TREATMENT OF GRAVES'S DISEASE BY THYMUS GLAND.

BY ARTHUR MAUDE, L.R.C.P. LOND., M.R.C.S. ENG.

IT is useful to collect cases of any new method of treatment, even if too few for deduction of absolute results.

In 1895 Dr. Owen[1] reported a case of exophthalmic goitre which was clearly benefited by the accidental use of thymus gland in mistake for thyroid, a mistake made by the butcher. I have since put four patients on this treatment, and the following are notes of the cases.

CASE 1.—The patient is a married woman, of a highly neurotic family, who has been affected about eight years, having presented every known symptom of Graves's disease for five or six years in great severity;[2] the cardiac and paralytic conditions were such as to confine her to bed for over a year. The goitre was large and increasing, and the gastro-intestinal attacks were severe and prominent. In July, 1895, the administration of thymus was begun. Tabloids were given, at first in ten-grain doses twice a day, but no effect was produced by their continuance for several weeks. The dose was then increased to forty-five grains per diem. She rapidly improved, but has relapsed so repeatedly on leaving off the thymus tabloids that she refuses to discontinue their use. Under their use all the signs are ameliorated, but no effect is produced on the size of the thyroid. I have had this patient under constant observation for eight years, and no other drug has produced any good result, not even belladonna freely administered, though Lister's coils applied to the præcordium have given her some relief from palpitation and sickness. The tremor in this case was highly marked and constantly improved by thymus.

CASE 2.—In a married woman aged thirty-nine years, of a highly neurotic family, goitre has existed since childhood, but the thyroid is clearly smaller than formerly. The cardiac symptoms and general failure of the health date back six years from an attack of influenza, now recognised as a common starting-point for the manifestation of Graves's disease. Tremor, excessive muscular weakness, and cardiac disturbance were all well marked. In February, 1896, she was put on fifteen grains of thymus tabloids twice a day. This treatment was continued for two months with great improvement of all the symptoms, especially of the tremor and loss of muscular power.

CASE 3.—In this instance a married woman forty-seven years of age presents a common history in this condition. When about seventeen years old she was quite invalided by obvious signs of Graves's disease, including a large thyroid, great proptosis, cardiac disturbance, diarrhœa, extreme emaciation, and great mental disturbance, with partial dementia and delusions of terror. After a few years she apparently recovered entirely and enjoyed good health. She remained, however, subject to diarrhœa, easily excited by emotion, and great mental excitability. In November, 1894, she presented retraction of the right upper eyelid increased by excitement or nervousness, and soon after she showed slight proptosis and occasional thyroid swelling. There was, however, no disturbance of the heart till about January, 1896. All these symptoms were then increased during the anxiety caused by her husband's illness. His sudden death in May, 1896, caused an outburst of all the usual symptoms. She began taking a fluid extract of thymus (tabloids being found to cause nausea) and improved steadily during two months' administration. The regular use of digitalis in increasing doses for some previous weeks had produced little effect on the cardiac irregularity.

CASE 4.—The patient was a married woman, fifty years of age, who has been goitrous since she was eighteen years old, but she presented no signs of Graves's disease till 1891, though I had had her under observation for some years previously. She has since manifested all the usual signs, as well as various severe nervous symptoms, which I have detailed in former papers[3]—viz., paralysis of various basal nerves, ptosis, ophthalmoplegia, paralysis of facial, dementia, ambulatory "epilepsy," &c. Tremor had always been highly marked, gastric and intestinal symptoms were not prominent as a rule, but she has had infrequent attacks of diarrhœa and hæmatemesis of great severity. She had in 1894 twenty-four motions in one day of almost pure arterial blood. In November, 1895, she had a sudden profuse hæmatemesis followed by collapse so extreme that she seemed moribund. After she rallied she was given forty-five grains of thymus tabloids per diem for a month, and her improvement was very remarkable; she remained in a fair state of health for many months.

In the last three cases I have given I cannot claim that the rapidity and maintenance of improvement have been more than might occur under other treatment or under none at all; but I am prepared to assert that the value of thymus seems as great as that of any other drug, such as belladonna. It certainly does improve the deranged heart action, but it seems more particularly to lessen the gastro-intestinal symptoms and the tremor and general muscular weakness. Three of my cases have presented great psychical alteration, and in all of them the mental state has improved readily. Mikulicz[4] reports a case treated by raw sheep's thymus in doses of ten to twenty-five grammes in gradually increasing doses about three times weekly. The subjective symptoms, the exophthalmos and tachycardia were all diminished, but the goitre and tremor remained unchanged. In Case 1 the tremor has been quite excessive and has always been relieved by thymus at once. Cunningham[5] administered thymus, as fresh gland or in tabloids, in four cases, and marked improvement resulted in all. He remarks that his cases and Owen's were "not of the type secondary to an ordinary hypertrophied thyroid." This remark applies to two of my cases only. It has, however, no practical bearing, as many pronounced cases of exophthalmic goitre present little recognisable thyroid enlargement. In none of my patients was any effect produced in the size of the thyroid; in fact, in one of them it steadily increased. No useful purpose would be served by speculating here as to the mode of action of thymus in these cases; I wish merely to supply a note on this line of treatment to enlarge its application and multiply observations thereon. No bad effect has been found to follow the exhibition of the largest doses.

Westerham, Kent.

[1] Brit. Med. Jour., 1894, vol. ii.

[2] St. Bartholomew's Hospital Reports, vol. xxvii., p. 139, and vol. xxix., p. 187.

[3] Brain, 1892, vol. xv., p. 121. Journal of Mental Science, January, 1896. St. Bartholomew's Hospital Reports, 1891, vol. xxvii., p. 137.

[4] Berliner Klinische Wochenschrift, April 22nd, 1895.

[5] Medical Record, June 15th, 1895.

AN ACCOUNT OF TWO CASES OF COKO OR FRAMBŒSIA.

(ILLUSTRATED BY REPRODUCTIONS OF PHOTOGRAPHS.)

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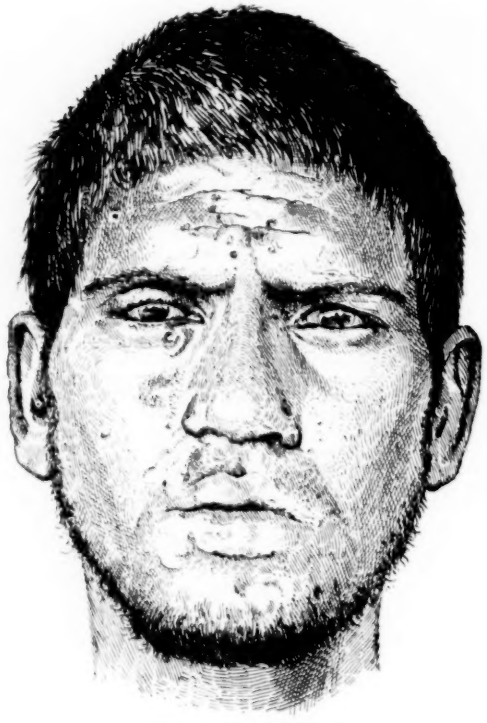
THE following two cases are of sufficient rarity to make them, I believe, worth recording, especially as Nickolls, in his report on Yaws in the West Indies, makes the assertion that the coko of Fiji is a different disease from the yaws of the West Indies.

CASE 1.—An Indian immigrant, under indenture to the Rewa Sugar Estate, was admitted to the Koronivia Hospital on May 26th, 1894, suffering from a simple ulcer of the instep of the right foot. He had been absent from the plantation for three weeks prior to admission, during which time he had been living in Fijian native towns and going about without any dressing on the ulcer. Coko was prevalent in all the towns in which he had resided. His general health had been good and there was no history of any specific disease; his parents were living and healthy. A red wash dressing was ordered and he was placed on ordinary diet. On June 1st

the patient complained of pains in his limbs; the temperature was 101° F., but in the evening it rose to 103°. He was ordered a purge and ten grains of sulphate of quinine, and was given a fever diet. The blood was examined, but no malaria parasites were discovered. The ulcer was progressing favourably, the granulations not being exuberant; a boracic ointment dressing was now applied. On the 2nd the temperature was normal. The patient complained of gastric disturbance; the bowels were regular. The granulations of the ulcer looked exuberant and it was touched with nitrate of silver. On the 4th there appeared on the body an eruption consisting of papules each of the size of a pin's head, being chiefly noticed over the chest, the external surfaces of the arms and legs, and over the back. A yellowish crust had formed over the ulcer, on removal of which whitish, sodden granulations were to be noticed. A diagnosis of coko was made, and the patient was ordered the following three times a day: ten grains of iodide of potassium, ten minims of aromatic spirit of ammonia, and water to one ounce. The following ointment was applied to the ulcer: one and a half drachms

FIG. 1.



Appearance of face in Case 1.

of lactic acid and one ounce of nitrate of mercury ointment. An ordinary diet was ordered, including one ounce of whisky. On the 6th the ulcer was drying up, the granulations looked more healthy, and some of the papules had disappeared, while others over the anterior and internal surface of both arms, the lower part of the chest, and the middle of the upper lip had become pustular and increased in size to half an inch. (Fig. 1.) Dilute nitrate of mercury ointment was applied to the ulcer on the instep, and the lactic acid ointment mentioned above was applied to the pustules. The patient's general health was good, but he complained greatly of itching. On the 16th a large number of pustules were healing and contracting. On July 5th a fresh crop of semi-transparent raised swellings had appeared on the face, chiefly about the lips and nose. On the 20th the sodden verrucæ about the face had become larger. The general health was excellent. A few vesicles (phan-gratelle) had appeared about the body, chiefly on the chest; flat-topped tubercles had appeared on the buttocks, some of them being almost as large as a filbert; on some of these scabs had formed. On Aug. 5th most of the swellings had dried up and were contracting. The patient was still on the same treatment. On the 26th he was nearly well; only one or two tubercles were to be noticed and most of these were drying up. On Sept. 4th he was cured. On Aug. 6th, 1895, the patient showed no signs of any fresh eruption and stated that he had had none since leaving hospital, and he also said that he had never seen any disease similar to the one from which he had suffered.

CASE 2.—An Indian immigrant was in the service of the Rewa Sugar Company, Fiji, but lived with some Fijians and half-castes at Daoni-Leon. He was admitted to the Koronivia Plantation Hospital on June 13th, 1894, suffering from eczema impetiginoides of both feet, and was discharged cured on the 28th. On July 9th he complained of desquamation over the chest and arms, and as he was feverish he was admitted to hospital by the attendant. The evening temperature was 103° F.; the blood was examined and showed no malaria parasites. He complained greatly of

FIG. 2.

Appearance of face in Case 2, showing flattened pustules.

skin irritation. I ordered ten grains of sulphate of quinine and a purge and a lotion of liquor carbonis detergens in spirit. On the 10th he was better and no longer complained of itching; the morning temperature was 101°. On the 11th the temperature was normal. A papular eruption of little pimple-like bodies about the size of a pin's head appeared about the face, arms, legs, and chest. The general health was good. The patient stated that he had never had syphilis, nor was there any family history of this disease. On the 14th most of the papules had grown in size, some having become pustular. The general health was still good. An ointment consisting of one and a half drachms of lactic acid and one ounce of nitrate of mercury ointment was applied to the pustules and he was placed on ordinary diet. One ounce of mixture of iodide of potassium (ten grains) was given three

times a day. On the 16th some of the tubercles had become as large as filberts; they were flat-topped and some were covered by scabs, on the removal of which a red fungus-like excrescence was to be seen; this was most marked about the lips. (Fig. 2.) The same treatment was continued. On the 25th there were twelve tubercles on the right leg, nine on the left, two on the chest, eight on the abdomen, five about the arms, and eight on the face. On Aug. 12th he was much the same as before. On the 25th the rash continued. The iodide of potassium was increased to fifteen grains and the ointment continued as before. On Sept. 10th a large number of the tubercles had healed, but a crop of fresh ones had appeared. On Oct. 12th most of the tubercles had disappeared, only a few remaining on the legs. On the 25th he was well and was discharged from the hospital. In August, 1895, the patient was seen and stated that he had been well since his discharge from hospital.

Remarks.—Both cases seem to be typical ones of coko in which the contagion was probably conveyed by flies. The patients were living among Fijian children who had the disease. In Case 1 the patient had an uncovered ulcer, while in Case 2 he had some sores on his feet, and thus each had raw surfaces which could be inoculated with the poison. In the former case the disease manifested itself first at the seat of inoculation, and the mother-yaw or mama-pian was well marked, while such was not noticeable in the latter case. In both the eruption was ushered in with feverish symptoms, the same disappearing on the occurrence of the rash. The preliminary desquamation was to be seen in Case 2, but in the majority of instances I have not noticed this, nor is it usual to find a mother-yaw as noticed in Case 1. Indian immigrants who go to Fiji state that the disease is unknown in their country and the majority of them who develop it there belong to the class of "bad workers"—that is, they are men who, not working well, do not earn much and consequently are not well fed; they also fraternise with the Fijians and thus are more exposed to contagion. The general tendency appears to be towards recovery. I have tried both mercury and arsenic without any success and have come to the conclusion that iodide of potassium internally with the application of lactic acid and nitrate of mercury ointment locally gives the best results. Cases in which mere expectant treatment has been used have proved most chronic, and this is well shown in Fijians, who nearly all suffer from it when young and who adopt no treatment, and as a result show signs of it for often as long as two or three years. Fijians consider it essential for a child to have coko, and should he not develop it they have been known to inoculate him with the disease. I have on several occasions inoculated the heads of fowls with the secretion obtained from coko sores, and in three cases typical rashes have resulted. One attack of yaws seems to confer immunity from subsequent attacks. Adults who develop the disease have in some cases shown what may be called "tertiary symptoms"—that is, years after their apparent recovery they have developed punched-out ulcers of the leg, as well as in one case carious disease of the bones; such a sequel is, however, rare. Under the microscope the crust of a tubercle is found to consist of epidermal cells and pus corpuscles, the rest of the tubercle being formed of granulation tissue extending down beneath the rete Malpighii. I have inoculated tubes of nutrient gelatin with the secretion obtained from beneath a scab, and have obtained on five occasions micrococci as described by Pierey, and out of four fowls inoculated with cultivations so obtained one contracted typical coko.

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Rewa, Fiji.

SOCIETY FOR THE STUDY OF INEBRIETY.—At a quarterly general meeting of the Society for the Study of Inebriety, on July 9th, Dr. Norman Kerr presiding, a paper entitled "Why do Men Drink?" was read by Dr. Stephen Lett, medical superintendent of the Homewood Retreat at Guelph, Ontario. The author laid the greatest weight on pain, in its widest sense, as the chief reason. Relief of unrest, material and psychological, was sought for in narcotic indulgence. Surgeon-Major G. K. Poole, M.D., Dr. Hazell, and Mr. F. J. Gray took part in the discussion.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

ROYAL FREE HOSPITAL.

A CASE OF LARGE MOLLUSCUM FIBROSUM OF THIGH; REMOVAL; RECOVERY; REMARKS.

(Under the care of Mr. W. H. BATTLE.)

IT is not often that the surgeon is requested to remove tumours of the character presented by the growth in this case. The large heavy folds of skin, which appear as if a part of the skin had slipped down, are generally tolerated by a patient, whilst the rounded pedunculated tumours which are always getting in the way have frequently to be removed. The large size of the tumour shown in Fig. 1 makes the case unusual, and the wound was an extensive one. The most interesting feature to many will be the presence of the fibromata which were found in the tissues under the growth. For the notes we are indebted to Miss Patch and Miss C. Fitter.

A girl aged eighteen years was admitted to the Royal Free Hospital on Dec. 10th, 1895. She stated that she was born with a small place on the right thigh. When she could first remember it it was about two inches long by half an inch wide, in the long axis of the limb, but it had grown

FIG. 1.

Tumour before operation. From a photograph.

gradually as the patient had grown. She had occasionally had some pain in it, coming and going quite suddenly without any special cause, but she had chiefly had inconvenience in walking. The family history was good, there being no history of tumours. One brother was, however, said to be "in a consumption," the others were well. She was a well-nourished girl with dark skin, somewhat sallow complexion, and dilated capillaries in the cheeks. She complained of a large tumour on the outer side and front of the

right thigh. It reached downwards about thirteen inches from a point just below the great trochanter and extended inwards over the front of the thigh for about ten inches at its lower part. It was very soft and elastic, and hung down in large, heavy folds when it overlapped; the skin was slightly pigmented of a dirty yellow colour for about one inch along the posterior and lower borders of the tumour. The skin of the tumour was brown from pigmentation, corrugated, and there was a tendency to division into squarish segments with narrow lines of natural-looking skin between. At the margins of the growth there were small islets with quite healthy-looking skin separating them from the main growth and from each other. The tumour resembled a huge field of hypertrophied and pigmented skin and could be easily moved in various directions over the deeper structures. It gave the patient no pain, but caused, as already stated, inconvenience in walking, and the perspiration from it was of an offensive character. Over the skin of the back were about half a dozen small wens, the largest being about the size of the tip of the little finger. There were also some pigmented spots about the flanks. The internal organs were healthy. Ether was given and the tumour removed on Dec. 24th.

FIG. 2.

The appearance of the thigh after removal. From a photograph.

Mr. Battle made an incision along the lower margin of the growth for the whole length, keeping close to it. This incision was carried down almost to the deep fascia and the fold of skin dissected off. Another incision was then made along the upper margin of the fold, so placed that it should be possible to suture without undue tension the two margins of the wound. This involved the leaving of some islets of pigmented and changed skin, especially about four inches from the anterior superior spine. The wound made was necessarily extensive, measuring twenty inches in length. Many small vessels required to be secured. When dissecting up the deeper attachments of the tumour a number of hard moniliform tumours showed themselves. They were white, fibrous-looking, consisted of rounded bodies of irregular size, and formed chains of varying length. The appearance presented was that which is known as "finger and toes" in a turnip field. Interrupted silk sutures were inserted and the wound came together very well. Considerable pressure was required to stop oozing of blood, which continued after removal to the ward. Some stitches were removed on the 20th and the remainder on the 30th. There had been, and still was, a good deal of serous discharge, but no pus. The pigmented part referred to as left in the upper part of the wound was œdematous and rather red, and here the wound was tending to gape for an inch or two. The temperature had been normal throughout. On Jan. 15th, 1896, the temperature rose to 100° F. and there was some inflammatory swelling of the edges of the wound. This, however, rapidly subsided and the temperature resumed its normal range. The wound at this point had not quite closed when she left the hospital on Feb. 13th. It has since become quite firm and presents the appearance shown in Fig. 2.

Remarks by Mr. BATTLE.—When I first saw the tumour in the thigh of this patient and appreciated its extensive attachments I was not inclined to recommend removal; but as the patient herself was anxious to get rid of it, and there was no insuperable difficulty, it was taken away in the manner described. The hæmorrhage was considerable, there being numerous small arteries which required ligature, and the excision was done in stages according to the number of forceps available. The tumour presented the characters of a molluscum fibrosum and was probably, as the girl thought, of congenital origin. The fibromata which appeared in the subcutaneous tissue beneath the tumour presented a peculiar appearance; there were three or four groups of irregular size, with the long axis lying from above downwards, or downwards and outwards. Each group consisted of three or more rounded or ovoid bodies, one of which was as large as a cherry. They were hard and white, cutting like fibrous bodies, but on removal there was no evidence of any central cord such as a nerve or lymphatic extending beyond the moniliform group. She had not suffered from neuralgia and has not since had any loss of sensation in the parts below the wound which might be ascribed to division of a nerve. Microscopical examination of the growths shows only fibrous tissue with some nuclei. Dr. Payne[1] in this country drew attention some years ago to the occasional occurrence of neuro-fibromata in patients suffering from molluscum fibrosum, and also directed attention to the work which had been previously carried out by von Recklinghausen and others. This case differs from those described where multiple fibromata were met with, so far as I can ascertain, in the fact that the growths were found under the tumour, and although they resembled the false fibroma of nerve described by Dr. Payne no connexion with nerve could be proved. There were no lumps on the nerves in other parts of the body, although such has been the case when the two forms of tumour have been met with in the same individual.

LEEDS GENERAL INFIRMARY.

A CASE OF FÆCAL FISTULA; A NEW MODIFICATION OF ENTERECTOMY.

(Under the care of Mr. W. H. BROWN.)

THE treatment of the fæcal fistula which is left after the separation of gangrenous bowel nipped in a hernia is usually difficult, and Mr. Brown's case appears to have been exceptionally so. The method which he successfully employed to close the opening, that of resection and subsequent suture, is the one which has been most satisfactory during recent years in the severe cases, in fact, since the well-known case of Mr. Makins directed the attention of the profession in this country anew to its advantages. We cannot give statistics of the results as now obtained, but the mortality is lessening and we may hope for even better returns as time passes. The use of Dupuytren's enterotome is almost entirely given up, we seldom see it in the hospitals of the present day.

Mr. Brown first saw the patient, a woman aged sixty-three years, with Mr. Dixon, her medical attendant, in November, 1895. She was then suffering from symptoms of intestinal obstruction due to a strangulated umbilical hernia which was gangrenous. Mr. Dixon, whose aid had only been sought an hour before, stated that she had never complained to

[1] Transactions of the Clinical Society of London, 1889, p. 191; Transactions of the Pathological Society of London, 1887, p. 69.

him of any illness, although he had been in daily attendance upon a member of her family for some time previously. On examination the following conditions were noted: there was a large black mass the size of a fœtal head at term occupying the central point of the abdomen, from which stinking serum was exuding. The general condition was very bad, and Mr. Brown therefore cut away with scissors as much of the sloughing tissue as enabled a free escape of contents of the bowel to take place. After a few weeks the parts cicatrised and a narrowing fæcal fistula remained. The tendency to close increased and upon many occasions dilatation was needed to prevent obstruction. Attempts were made to restore continuity, the method of Mr. Mitchell Banks being tried amongst others, but all failed, and it seemed only too likely that the case would end badly either from closure of the fistula by cicatrisation or exhaustion due to the many evils resulting from the fæcal fistula at the umbilical aperture. It was difficult to know how to re-unite the ends of intestine without opening the peritoneal cavity, and it was felt that to do so must end in fouling of the peritoneum. Fortunately for the patient, at the suggestion of Dr. Oswin of Chicago, who happened to visit the Infirmary in March, 1896, a method was pointed out which he had adopted successfully in two similar cases, and it is entirely to his ingenuity that the case is now recorded as cured. After ether had been given an incision was made round the fistula at a distance of one inch, and the skin was dissected inwards towards the opening. This gave a sort of oval flap of skin attached by its base to the margin of the fistula. This flap was turned in over the opening and stitched tightly with silk so as to completely shut off the intestinal aperture. After having ascertained that it was impossible that any contents of the bowel could pass through, the abdominal walls were well cleaned, and all taking a part in the operation prepared as for abdominal section. Mr. Brown then opened the abdomen above and below the fistula, separated and drew out the involved intestine to the extent of about four inches, clamped with indiarubber tubes the distal and proximal ends, cut away the parts originally involved, and proceeded to effect an end-to-end junction, dropped back the sutured bowel (transverse colon), and closed the wound in the ordinary way. The after-history need not be given in detail. The bowels were moved on the fifth day; the motions were at first flattened, but gradually became natural. The patient is now well.

Remarks by Mr. BROWN.—Whilst the operation of enterectomy as a curative measure for the relief of fæcal fistula is becoming of frequent occurrence, I am not aware that any of the English text-books describe the method I adopted in this instance. The preliminary closure by skin flap if carefully done absolutely prevents fæcal contamination of the peritoneum, and this robs enterectomy undertaken for fæcal fistula of one of its chief dangers. At the time of operation it was noticed that the distal end of the bowel was unnaturally attenuated and paler than normal. This would seem to suggest that if too long an interval be allowed to elapse before continuity is restored the atrophied bowel might fail to resume its function. The help given me in the case by Dr. Oswin was of the greatest benefit, and I trust that others may have the opportunity of utilising, as I have done, this most ingenious method of overcoming a great difficulty.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—July 24th has been fixed for a meeting in connexion with the re-opening of the renovated operating theatre of the above institution. At half-past twelve on that day, in the presence of the Earl of Dartmouth, the chairman and other members of the Weekly Board, the medical and surgical staff, and the subscribers to the large sum of money which has been received, Mr. Christopher Heath, the outgoing President of the Royal College of Surgeons of England, will perform the opening ceremonial. A luncheon will afterwards be given by the members of the Weekly Board and Medical Committee in the Bell medical and surgical library, to which, in addition to the above, as many medical men in the town and district as the space will allow have been invited. Later in the afternoon a reception will be held in the grounds of the hospital by Mrs. Thorneycroft, the wife of Lieutenant-Colonel Thorneycroft, chairman of the Weekly Board.

Medical Societies.

OPHTHALMOLOGICAL SOCIETY.

Experimental Research on the Course of the Optic Nerve Fibres.—Congenital Hydrophthalmos.—Tension in Cases of Intraocular Growth.—On the Employment of Electrolysis in the Treatment of Detached Retina.

THE last ordinary meeting of this society for the present session and the annual general meeting were held on Friday, July 3rd, the President, Mr. E. NETTLESHIP, being in the chair.

Dr. C. H. USHER and Dr. GEORGE DEAN communicated an account of an Experimental Research on the Course of the Optic Nerve Fibres. The method employed was that of wounding the retina and tracing the degeneration in the nerve fibres by means of Marchi's osmium bichromatic method. The wounds were made by a Graefe's knife or galvano-cautery, the ophthalmoscope being used to enable the operator to produce the lesion in the part of the retina selected. The first part of the communication dealt with the results obtained in a number of rabbits. As seen by the ophthalmoscope the wounds in the fundus presented the appearance of a white elongated gap with sharply defined edges. Its length was from about three-quarters to one and a-half of the optic disc diameter. Among the lesions were included division of the anterior and posterior bands of opaque nerve fibres. In all the cases a tract of degeneration was found in the nerve corresponding to the wounded retina. The degeneration occupied a situation in the nerve corresponding to the part wounded, for example a lesion in one quadrant of the retina caused a degeneration in the corresponding quadrant of the nerve. The degeneration maintained the same situation throughout the whole length of the nerve. In the cases where the opaque bands were incised the degeneration was found to be denser than in the cases where other parts of the retina were wounded. In every case minute black points were found in the nerve of the eye which had not been wounded. These points were diffusely scattered, and much less prominent than those on the side of the lesion; they were found to stand in direct ratio to the amount of degeneration in the nerve of the eye operated on. The second part of the communication consisted of results obtained in the case of a monkey, in which a lesion by means of the galvano-cautery was made between the optic disc and the yellow spot. A well-defined area of degeneration was found in the corresponding optic nerve. It lay externally in the anterior part of the nerve, whereas it occupied a central position in the posterior part of the nerve. Its shape in the anterior part of the nerve was that of a narrow isosceles triangle, with its base at the periphery and its apex towards the central vessels. Behind the entrance of the retinal vessels the area gradually became central; in this situation it assumed a somewhat irregular form with angular projections. Near the chiasma it was still in the centre of the nerve and was crescent-shaped. In the other optic nerve small black points were present similar to those found in the case of the rabbits. The interest of this case in relation to the cases of toxic amblyopia and in relation to the course and origin of the macular fibres was indicated.—Mr. C. D. MARSHALL criticised Marchi's method of staining nerve fibre, stating that black dots were to be found in nerves so treated though not degenerated. They, however, readily followed lesions of nerves and were valuable as a sign of degeneration after injury.

Mr. F. R. CROSS read a paper on Congenital Hydrophthalmos, illustrated by lantern slides. Enlargements of the eyeball of this nature depended on an increase of the intraocular tension during youth from whatever cause, with consequent expansion of the corneo-scleral envelope and other ocular tissues. Hydrophthalmos in the young was equivalent to glaucoma in the old. Many of the cases of so-called buphthalmos were but a later stage of staphyloma in childhood; one true form of secondary glaucoma in children resulted from complete occlusion of the pupil, with bulging of the iris and blocking of the filtration angle. The closure or compression of the filtration angle appeared to be the important element in nearly all cases of glaucoma. One of the reasons urged against this theory was the presence of the

deep anterior chamber in hydrophthalmos and the apparent wide separation between the cornea and iris. Careful microscopic examination of sections of hydrophthalmic eyes, however, showed that although the anterior chamber was deep, either the iris was adherent at its base to the cornea, or strands of tissue were present there blocking up the angle and indicating a previous adhesion which had broken down. Other theories had been propounded to account for this condition, but they were not sufficient alone, or the data on which they were founded could not be verified by subsequent observers. Thus it was shown by an examination of one hydrophthalmic eye by Durr and Schlegtenda that the vortex veins of the choroid were distended; but an examination of the author's specimens showed a tendency to atrophy of the choroid, not to its cystic degeneration or to distension of its veins.—Mr. TREACHER COLLINS pointed out that in the cases of buphthalmos which did not follow on any known antecedent disease the symptoms always dated from birth, and that, therefore, they must look for some congenital malformation as the original cause of the changes which ensued. He showed that sometimes the iris failed to become completely separated from the posterior surface of the cornea and that a congenital anterior synechia resulted. If such an adhesion existed at the periphery of the anterior chamber it would tend to obstruct the exit of fluids through the filtration area. In several specimens of buphthalmic eyes he had examined he had found an adhesion of the root of the iris to the cornea. In some cases of buphthalmos the tension became normal and the progress of the disease was arrested; he suggested that in them the enlargement of the globe and the dilatation of the anterior chamber caused the adhesion of the iris to become stretched and sometimes to give way.—Mr. PRIESTLEY SMITH thought the specimens showed indisputable obstruction of the filtration angle; to his mind the evidence was convincing that the increased tension was due to closure of the angle of the anterior chamber. Referring to the frequency of occurrence of this condition, he said he had recently visited a blind school where he found 6 children out of 125, or about 5 per cent., blind from congenital hydrophthalmos. He pleaded for the use of the term congenital glaucoma, that these cases undoubtedly belonged to the same group as glaucoma in the adult.

Mr. C. DEVEREUX MARSHALL read a paper on Tension in Cases of Intraocular Growth. With a view of further elucidating the causes of glaucoma in cases of intraocular neoplasms 100 cases had been examined, including (A) 53 in which the choroid only was affected; (B) 28 in which the ciliary body or iris was involved; and (C) 19 in which a glioma of the retina existed. Series A.—In the first group the intraocular tension was as follows: (1) increased tension in 36, or 67·92 per cent.; (2) normal tension in 16, or 30·18 per cent.; and (3) diminished tension in 1, or 1·88 per cent. Microscopically it was found that in 27 cases out of the 36 in which the tension was increased the angle of the anterior chamber was closed. In 7 the angle was restricted, and in 2 it was not noted. Of the 16 cases in which the tension was normal the angle was found open in 14, and in 2 cases the condition was not stated. There was no case in which the tension was undoubtedly less than normal, 1 was noted as (?), and in this case the angle was open. Series B.—In this group in which the ciliary body was affected the following conditions of tension existed: (1) increased tension in 10, or 35·71 per cent.; (2) normal tension in 14, or 50 per cent.; and (3) diminished tension in 4, or 14·28 per cent. Of the 10 cases in which the tension was increased the angle of the anterior chamber was closed in 6, in 2 it was much narrowed, and in 1 case it was open. Of the 14 in which the tension was normal, the angle was open in 10, in 1 it was narrowed, in 2 it was closed, and in 1 the condition was not stated. Of the 4 cases in which the tension was below normal the angle was open in 2, in 1 it was somewhat narrowed with a shallow anterior chamber, and in 1 the angle was closed on one side and doubtful on the other, but the ciliary body was to a great extent destroyed by the growth. Series C includes 19 cases of glioma of the retina, and the condition of the tension was as follows: (1) increased tension in 7, or 36·84 per cent.; (2) normal tension in 10 or 52·63 per cent.; and (3) diminished tension in 2, or 10·52 per cent. Of the 7 cases in which the tension was increased, the angle was closed in 3, narrowed in 2, open in 1, and in 1 the condition was not stated. Of the 10 cases in which the tension was normal, the angle was open in 7, narrowed in 1; in 1 the globe was nearly full of growth and there was no anterior chamber, and in 1 the condition of the angle is not noted. Of the 2 cases in which the tension was diminished the angle was open in 1, and in the other the globe was shrinking after having perforated. The vast majority of these cases proves the rule that the intraocular tumour bears a direct relation to the condition of the angle of the anterior chamber, and also that it is by no means uncommon to have normal or even diminished tension in eyes containing new growths. There are one or two exceptional cases in which the tension is increased when the angle is open and normal or diminished when the angle is closed, but these are all complicated by a gross affection of the ciliary body leading either to a considerable diminution of its normal functions or else probably to the opening of secondary channels through which fluid can escape from the globe.

Mr. SIMEON SNELL read a paper on the Employment of Electrolysis in the Treatment of Detached Retina. He stated that the recent discussion at this society indicated that the treatment of detached retina was still regarded as unsatisfactory. Occasionally good results were doubtless obtained. A patient he operated upon many years ago by sclerotic puncture was, he understood, following his occupation and was dependent upon that eye. He alluded to Terson's advocacy of electrolysis in detached retina. Mr. Snell had employed it in three instances. The first in a hopeless case, simply to test the method, but the detachment was reduced; the second, an extensive detachment, had been materially improved in lessening the detachment, increasing the size of the field and considerably improving the vision: and the third resulted in a practical disappearance of the detachment, a much enlarged field, and also improvement of vision from fingers indistinctly to $\frac{1}{36}$. It was too early to state the final result yet. Mr. Snell thought the method was worthy of trial.

The following living and card specimens were shown:—

Mr. ADAMS FROST: Pulsating Exophthalmos undergoing Spontaneous Cure.

Mr. HARTRIDGE: Slight Buphthalmos with Deep Cupping and Raised Tension in a girl aged nine.

Mr. KENNETH CAMPBELL: Infecting Chancre of Eyelid.

Mr. PRIESTLEY SMITH: Scheme for the Examination of Ophthalmic Cases.

Mr. LANG: Double Optic Neuritis.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

Muscle Atrophy in Tuberculous Joint Disease.—Transthoracic Hepatotomy for Abscess of Liver.—General Secondary Cancer of the Bones.—Excision of the Pylorus for Cancer.

A MEETING of this society was held on July 1st, Dr. CRAIG, Vice-President, being in the chair.

Dr. A. G. MILLER read a paper suggesting that contraction of the arteries of a limb is the probable cause of Muscle Atrophy in Tuberculous Joint Disease. When amputating for such cases he had noticed that the main arteries of the limb were unusually small. There was a recognised co-existence of arterio-stenosis and muscle atrophy under other circumstances, and it did not appear that the muscle atrophy could be the cause of arterio-stenosis; diminished blood-supply was more likely to be the cause than the result of the muscle atrophy. In the atrophy of tuberculous joint affections the reaction of degeneration was not present in the muscles as seen in atrophy from want of use or nerve causes, nor was there any fatty or fibroid degeneration present in the muscles. The muscle atrophy was progressive when the disease was not checked and permanent when the disease went beyond a certain point. Possibly the products of tubercle bacilli tended to cause vaso-contraction just as the products of pyogenic organisms caused vaso-dilatation and diapedesis. There was always a close relation between the special vessels supplying a given joint and those supplying the muscles that atrophy most, and the muscle atrophy is of a kind likely to be caused by deficient blood-supply rather than by nerve influence.

Dr. BYROM BRAMWELL and Mr. HAROLD J. STILES read a paper on a case of Deep-seated Tropical Abscess of the Liver treated by Transthoracic Hepatotomy. The patient, a man twenty-eight years of age, had good health till six years ago when he suffered for some months from gonorrhœal

arthritis. In June, 1894, he went to the west coast of Africa, and had fever a month after his arrival. In the spring of 1895 he had dysentery, was in hospital for three weeks, was carried on board ship, and recovered on the voyage home. He remained well till August, when he was again attacked with dysenteric diarrhœa which yielded to treatment but was followed by pain in the right hypochondriac region, much aggravated by breathing deeply or yawning. In September he had a rigor and febrile disturbance and was put on quinine. The diagnosis ultimately arrived at was suppurative hepatitis in the upper and back part of the right lobe. On Nov. 7th Mr. Stiles made an exploratory puncture in the seventh intercostal space in the mid-axillary line and drew off about a tablespoonful of brick-red muco-pus. The abscess appeared to be about two and a half inches from the surface and was evidently of considerable size. Gelatin and agar-agar tubes were inoculated but remained sterile. No amœbæ could be discovered. Two days after the exploration Mr. Stiles performed the following operation: a four-inch incision was carried from the mid-axillary line obliquely downwards and forwards along the seventh intercostal space, and two and a quarter inches of the seventh and eighth ribs were excised sub-periosteally. An area of the costal pleura about two inches square was then exposed by removing the periosteum, the adjacent intercostal muscles, and a digitation of the serratus magnus. The general cavity of the pleura was next shut off by the introduction of a circle of interrupted and slightly overlapping catgut sutures, according to the method recommended by Mr. Godlee but deep enough to puncture through the diaphragm into the substance of the liver. A crucial incision was then made in the costal pleura within the area enclosed by the sutures, and the diaphragm covered by its pleura was exposed. On incising the diaphragm it was found to be adherent to the liver, but the adhesions being recent, union of the two structures was further secured by a continuous suture placed within the interrupted ones already mentioned. An area of liver substance the size of a half-crown piece was thus exposed. The circumference of the wound was then packed with gauze and the largest trocar and cannula of a Potain's aspirator pushed into the abscess, which was situated about an inch from the surface of the liver. With the cannula retained in position to act as a guide, a knife was pushed alongside it into the abscess and the opening dilated to admit the finger. The abscess was about the size of an infant's head. After evacuating the contents, the cavity was flushed out with a large quantity of sterilised water. A Keith's glass tube fitting tightly within a flanged rubber tube, which projected about an inch beyond the glass, was introduced. The wound was partially closed by a couple of sutures introduced at its extremities. The recovery was uninterrupted. The patient was out of bed at the end of the fourth week, and three weeks later was going about out of doors with the wound completely closed. At the end of the second week the copious, dark-red, almost gelatinous muco-pus gave place to a scanty purulent secretion indicating that the necrotic lining of the abscess had become replaced by granulations. In his remarks upon the case Mr. STILES considered that in the absence of local signs the seventh intercostal space should be the point first selected for exploratory puncture. When there is no downward enlargement of the liver puncture through the ninth space is too low and might lead to a wound of the colon or even of the gall-bladder. The advantage of a bacteriological examination of the pus before proceeding to operation is that in the event of its being found sterile (which it very frequently is) there will be no necessity to perform the operation in two stages. In shutting off the pleural cavity there is a double advantage in passing the suture before incising the pleura—viz., that the sutures are more easily and more satisfactorily introduced, and that very little air enters the chest; in case the liver should not have become adherent to the diaphragm the sutures should be carried through the latter into the substance of the liver.

Dr. JAMES RITCHIE read a paper on a case of General Secondary Cancer of the Bones (Osteo-malacia Carcinomatosa). The patient, a female aged forty-seven years, had her breast removed along with some of the axillary glands for a scirrhous carcinoma in June, 1885. She made a good recovery, but at intervals suffered from pains in the cicatrix, which, however, remained healthy in appearance. In October, 1894, both the pelvis and thorax were found to exhibit the changes seen in osteo-malacia, the pelvis was beaked, the spine twisted, and the ribs crowded together. In November, while she was being moved in bed something was heard to crack, and it was found that the fourth right rib was fractured. She died apparently from pulmonary thrombosis. The state of the ribs and costal cartilages had been investigated, but permission to make a more extensive examination could not be obtained. The cartilages showed senile changes, but were otherwise normal. The ribs showed a cancerous growth secondary to the breast tumour removed nine years before. Microscopic specimens and drawings were exhibited illustrating the mode in which the cancer had absorbed the bone (1) by the direct action of the cancer cells absorbing the bone, and (2) by the bone corpuscles themselves eating their way out and being set free. The bone marrow was found healthy. There were no osteo-clasts present.

Dr. GEORGE GIBSON and Dr. ALEXIS THOMSON showed a patient after Excision of the Pylorus for Cancer. The operation was performed on May 9th, 1896; the cancer was confined to the region of the pylorus and there were no secondary growths. The pylorus was resected by the method recommended by Kocher in his "Text-book on Operative Surgery," with this difference—that the approximation of the duodenum to the stomach was carried out by means of a Murphy's button, which had not yet been passed. The patient, a woman aged forty-five years, was now quite well; she ate ordinary diet with relish and had gained considerably in weight. The specimen was shown together with a section under the microscope; it was an alveolar or scirrhous carcinoma.—Dr. GIBSON and Dr. THOMSON also exhibited a specimen from a second case of Resection of the Pylorus for Cancer, in which the patient died of septic peritonitis upon the third day after the operation. The fatal result was ascribed to the impossibility of emptying the stomach beforehand because of a large number of grape skins and lumps of orange blocking the tube which was introduced for that purpose, the result being that leakage of contents of the stomach into the peritoneum took place at the operation.

Reviews and Notices of Books.

Disorders of the Male Sexual Organs. By EUGENE FULLER, M.D., Instructor in Genito-urinary and Venereal Diseases in New York Post-graduate Medical School; Member of the New York County Medical Society. Edinburgh and London: Young J. Pentland. 1895.

ON the back of this book we find inscribed "Male Sexual Organs," on the title page "Disorders of the Male Sexual Organs," but when we look into the text we discover that it is a treatise on the diseases of the vesiculæ seminales. If the book were intended only for the medical profession the modest title of "Diseases of the Vesiculæ Seminales" would suffice; this would not, however, attract anyone outside the profession, and it would remain unread by the larger section to which the present title is well calculated to appeal. The treatment recommended is so entirely under the special employment of the individual, and the number of cases in which "stripping the vesicles" is indicated so few, that we can but regret the form in which the author conveys his information. Our unfavourable impressions are strengthened by the cases recorded at the end of the book, not by the mere fact that they are recorded, but by the manner in which they are related. Let us in fairness add that there are parts of the book which reflect some credit on the author. The treatment of "stripping" the vesiculæ seminales, to recommend which the book is apparently written, is one of which we have had no experience; we cannot, therefore, condemn or commend the treatment; but we think it right to raise a note of warning with regard to the abuse to which it is likely to lend itself.

Handbook of Diseases of the Ear. By URBAN PRITCHARD, M.D., F.R.C.S. London: H. K. Lewis. 1896.

THE third edition of this well-known work fully maintains the reputation of its predecessors. The object of the author

is, he claims, to present to his readers a practical and helpful manual, and this, we may say at once, is fully achieved. Some new illustrations have been added and about thirty pages of new matter principally in connexion with mastoid operations and the intracranial complications of aural disease. The author has given his opinion regarding some of the more modern methods of treating chronic middle-ear catarrh. We regret to find he suggests nothing very reliable in the treatment of these common and troublesome cases. He does not, however, speak with enthusiasm of operations upon the drum and ossicles in these cases. A chapter is devoted to some of the more important conditions of the nose and naso-pharynx which cause or complicate deafness, and there is a useful appendix of formulæ at the end of the book. We think well of this little work. It is devoid of "padding," and though it would be easy to point out omissions, there are few, if any, subjects left out which are really of use to the practitioner of aural surgery. The experience of the author has taught him to offer to his readers what is sound and reliable and to reject much of that practice which does not truly advance aural surgery. The ligature of the external rather than the internal jugular vein in cases of thrombosis of the lateral sinus is plainly a printer's error. We have no hesitation in recommending this book to the favourable notice of all interested in the subject.

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1. *La Sérotherapie au Caire, 1894-95. General Observations on Diphtheria Treatment with Serum.* By Dr. ENGEL. Published by the Sanitary Department of Egypt.
2. *Die in Kairo mit der Serumtherapie bei Diphtheritis erzielten Resultate.* By Dr. ENGEL. Being a reprint from the *Berlin Klinische Wochenschrift*, 1895, No. 37.

DR. ENGEL has collected as many of his colleagues' cases as possible, because he was the official appointed to distribute the serum when it first arrived from Berlin and Paris. He finds that in a total of 79 cases, all confirmed by bacteriology, there were 28 deaths, or 35·4 per cent. This result is very favourable, for all writers in Egypt agree that the mortality before the introduction of serum was at least 60 per cent. Only seven children were injected within the first forty-eight hours, and of these only two died (28·5 per cent.). He reminds his colleagues that they must strive to obtain Behring's ideal reduction of mortality to 5 per cent. We know that at Giessen and in Amsterdam, even including tracheotomy cases, the death-rate has been reduced to 8 per cent., and also that in the infectious hospital at Stockholm the deaths were 6 per cent. in 1895, as compared with 55 per cent. in previous years, while in our own country the death-rate was reduced at the Northern Hospital of the Metropolitan Asylums Board from 61·9 to 7·6 per cent. Dr. Engel winds up by advising that serum be injected as soon as possible and in a concentrated form, so as to employ strong doses of antitoxin with as little serum as may be.

DERMATOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.—At an ordinary meeting on July 1st, 1896, Dr. J. F. Payne, President, in the chair, the following cases were shown:—The President: A peculiar form of Lichen in a girl aged seven.—Dr. Pye-Smith: A case of Chronic Recurrent Eczema in a boy aged fifteen, the subject of congenital xerodermia, which when first seen looked like Hebra's prurigo.—Dr. J. H. Stowers: (1) A case of Pityriasis Rosea in a boy of twelve; and (2) a woman, aged fifty-four, presenting multiple symmetrical patches of Morphœa.—Dr. Phineas Abraham: (1) An Eruption in a child, twelve months old, suffering from congenital syphilis; (2) Generalised Vaccinia in an infant; (3) a case for diagnosis (? Xeroderma Pigmentosum) in a woman; (4) Syphilis in a woman; and (5) Eruption on Tattoo Marks in a man.—Dr. David Walsh: (1) Four cases of Ichthyosis in children treated with thyroid; and (2) Excision of Lupus in a girl aged ten.—Mr. George Pernet read a note on Pemphigus of the Conjunctiva.

Analytical Records
FROM
THE LANCET LABORATORY.

VARIOUS CHEMICAL PREPARATIONS.

(JOHN RICHARDSON AND CO., FRIAR-LANE, LEICESTER.)

Some chemical preparations of especial interest have recently been submitted to us by this firm. Of these the well crystallised specimens of strontium bromide, uranium nitrate, and sodium benzoate are particularly worthy of mention. In addition we have also examined specimens of bismuth salicylate (of distinct value in various forms of diarrhœa due to typhoid fever and pulmonary and intestinal tuberculosis), bismuth subnitrate, and red iodide of mercury. Messrs. Richardson state that they are probably the only provincial house at present making these preparations. We trust that should other "provincial houses" be induced to follow their example the products will be as satisfactory and as pure as those before us.

VIROL (IMPROVED).

(THE LIQUOR CARNIS CO., 192, ALDERSGATE-STREET, E.C.)

According to a recent analysis the chief improvement that has been effected in the composition of this preparation has been in an increased amount of valuable mineral ingredients. Thus the total mineral matter amounted to 1·42 per cent., and it contained iron in excellent proportion associated with lime salts and phosphates both soluble and insoluble. Virol affords a really excellent means of administering fat, since not only is the fat presented in a form calculated to be speedily appropriated, but it consists of the fat of the marrow, which contains organic compounds of phosphorus and iron, which are of undoubted value in ministering to the growth and needs of the body. The fat is freed from combination with the active diastase of the malt in myriads of tiny globules on adding water. The quantity so separated amounted to 14 per cent. The malt continued its digestive action, as was shown by mixing it with starch emulsion, which was rapidly liquefied and eventually transformed into dextrine and sugar. The moisture in the preparation amounted to 22·60 per cent. These results show that the composition of virol is based on a formula that is excellent from a physiological point of view, and this is confirmed by the evidence of practical experience.

(1) ELECTROZONE. (2) MEDITRINA.

(THE BRITISH ELECTROZONE CORPORATION, LIMITED, TRAFALGAR-BUILDINGS, CHARING-CROSS.)

Both these preparations are stated to be obtained by electrolysing sea-water. The immediate effect of the current, as we have shown elsewhere,[1] is to split up the chlorides into chlorine and basic oxide, which to some extent re-combine, forming hypochlorites. As was shown, however, in the report of THE LANCET Special Analytical Sanitary Commission on the Hermite Process of Sewage Treatment by Electricity (the Recent Experiments at Worthing), a certain amount of deposition of bases supervenes, owing probably to the dissociation of magnesium hypochlorite, with the result that the electrolysed sea-water is found to contain hypochlorous acid. This is so with electrozone and meditrina, which exhibit, as far as we can see, no wide difference in composition from Hermite's fluid; at any rate, it gives precisely the same distinctive reactions. The strength of electrozone was found to be equal to 2·26 parts of chlorine per 1000, and of meditrina (which is recommended for internal as well as external administration) 0·6 part of chlorine per 1000. Electrozone contained 2688 grains of total salts per

[1] THE LANCET, May 28th, 1894.

gallon and meditrina 2856 grains per gallon. The amount of chlorides (reckoned as common salt) in each amounted to practically the same—33 parts per 1000, which is the average saline strength of sea-water. The quantity of bromides and iodides is unimportant and adds nothing to the value of the preparation, as is affirmed. Electrozone does not contain $NaHSO_3$ as stated in the formula on the label of the bottle. Such a salt could not exist in the presence of powerful oxidising agents—the two are absolutely incompatible. The properties of electrozone are identical with those of Hermite's fluid; it is a very powerful antiseptic, disinfectant, and deodorant, and possesses a strong immediate bleaching action *without the addition of an acid*. For use as a disinfectant it offers the advantage that its disinfectant constituents are not rendered inert by forming compounds, as do mercury and carbolic acid, with organic matter; while it has the indisputable merit of being non-poisonous, and the effect of its administration in large quantities would probably be simply that of an emetic. It is not a stable fluid, its strength rapidly diminishing on exposure to air.

RED CROSS TOILET SOAP.

(THE RED CROSS GERMICIDE CO., 61½ FORE-STREET, E.C.)

This is an antiseptic soap having for its basis the "Red Cross Germicide Perfume," which contains, *inter alia*, a certain fragrant and essential oil (anthrolin) that is considered to be five times more powerful than carbolic acid. The germicide, which itself possesses a very agreeable smell, is quite compatible with the soap, which is very pleasant to use. The soap basis presents a well-balanced composition and contains no free alkali.

LIMONA FOOD.

(LIMONA MANUFACTORY, PRESTON.)

Limona is essentially a farinaceous food so modified as to contain in a form that is calculated to be easily digestible proteids, fat, and carbohydrate in well-suited physiological proportions. Moreover, it contains an excellent proportion of mineral matter, prominent amongst which is soluble phosphate. It may be used with advantage in the daily diet and affords a palatable food.

REPORT OF THE MEDICAL OFFICER OF HEALTH OF LIVERPOOL ON RABIES AND THE MUZZLING OF DOGS.

DR. HOPE, in his report of June 25th to the Health Committee of the Liverpool City Council on the subject of rabies and the muzzling of dogs, states that powers regulating measures for the suppression or control of diseases of animals are vested in the Board of Agriculture, and the case of rabies, although the disease is one communicable to man, is no exception to the rule. Outbreaks of rabies during the last five years have been localised at different times in different parts of the country. The Board of Agriculture have therefore never deemed it necessary to pass an order requiring muzzling of dogs all over the country, having considered that unless the disease is so extensively spread as to make it difficult or impossible for the local authorities concerned, either individually or in combination, to successfully combat the evil, little or no advantage would be likely to be gained by the intervention of the central authority. In 1889 rabies became very prevalent in various parts of the country, more especially in the thickly populated districts of Lancashire, Yorkshire, and Cheshire. In the same year a muzzling order was adopted by the city council. As soon as suitable muzzling regulations were brought into operation the number of cases steadily fell, and in 1892 a minimum of thirty-eight cases was reported in this country. In February, 1892, the Board of Agriculture authorised the withdrawal of the muzzling order from certain parts of Lancashire, so far as it related to dogs which had a collar with the name and address of the owner of the dog legibly engraved on it. This order also extended to Liverpool. The recurrence of rabies, however, necessitated a re-adoption of the muzzling order in the city of Liverpool in January, 1894. It may be well to state that the greater portion of cases of rabies and of hydrophobia relatively to population occurs in cities and densely populated districts; the reasons, therefore, for a muzzling order in cities are perhaps more cogent than in rural districts. What is known as a muzzling order contains provision for the slaughter of dogs affected with, or suspected of, rabies. It also provides for the seizure, detention, and disposal of stray dogs and of dogs not muzzled. So far as Liverpool is concerned, the effect of the provision for the destruction of stray dogs is shown by the following table indicating the number of dogs taken from the streets and destroyed during each of the last six years:—

Year.	Number.	Year.	Number.
1890	4070	1893	830
1891	1950	1894	3146
1892	1449	1895	3312

It will be seen from the foregoing figures that the streets were fairly cleared of stray dogs in 1890 and 1891 under the muzzling order then in operation, but the numbers diminished largely in 1893, when there was no muzzling order. Since the adoption of the muzzling order of 1894 no less than 6458 unmuzzled dogs have been taken from the streets, these dogs being, in the language of the Society for the Prevention of Cruelty to Animals, "generally speaking, worthless and diseased." The official return of the Board of Agriculture for the year 1894 contains the following paragraph: "Local authorities, however, have shown great reluctance to exercise the extensive powers they possess, more especially with regard to the imposition of the muzzle. Muzzling regulations are unpopular among dog-owners, and usually bring upon local authorities making them the odium of interfering with the right which each dog-owner thinks his dog possesses to bite at least one person. A popularly elected body such as a town or city council is perhaps naturally unwilling to expose itself to unfavourable criticism. But in view of the terrible mental sufferings endured by persons bitten by a rabid animal and by their friends, and the fearful nature of the death that awaits some of the victims, any measure which could minimise the danger should secure cordial, although it may be silent, approval." The statements put forward on behalf of the Royal Society for the Prevention of Cruelty to Animals are briefly: (1) that muzzling is useless; (2) that the order has been long enough in force to fulfil any supposed useful purpose; and (3) that muzzling is cruel and causes much distress and suffering to dogs. The first two statements are sufficiently disposed of by the reports of the Board of Agriculture. With regard to the third, the orders of the Health Committee prescribe the kind of muzzle to be used, and the medical officer of health of Liverpool has already expressed to the secretary of the society the hope that it will in the exercise of its functions check the practice to which they allude and of which presumably they have evidence, since the use of a muzzle which will cause suffering or interfere with lapping or breathing is a direct violation of the regulations of the Health Committee. Much has been made from time to time of the fact that a universal muzzling order has not been issued by the Board of Agriculture. It is, no doubt, a matter of very great regret that the board has not seen its way to issue a universal muzzling order; but the fact that the muzzling order may have been removed in a rural district where the necessity for an order may be but slight and that that district abuts upon an urban one where the necessity may be great is no reason whatever why precautionary measures should be cast aside in the urban district. Since June 13th last the medical officer of health has received information of three persons having been bitten—one of them having been bitten very seriously is still an in-patient in the Royal Infirmary. The dogs were destroyed, but no examination was made of their carcases nor has he any information as to whether their owners had entertained a mistaken notion that the muzzling order had been revoked or whether they were dogs which had wandered in from the county where the muzzling order has been recently revoked. The report of the Board of Agriculture upon the existence of rabies and hydrophobia during 1895 will shortly be published. In the meantime the medical officer is unable to advise the committee to make any alteration whatever in the regulations at present applying to the city.

REPORT OF

The Lancet Special Commission

ON THE

RELATIVE STRENGTHS OF DIPHTHERIA ANTITOXIC SERUMS.

THE discovery by Behring of the existence of antitoxin in the blood of animals rendered immune to diphtheria, and his application of this antitoxin to the cure of the disease, must be regarded as the most important advance of the century in the medical treatment of acute infective disease. On the Continent the advantages of the new treatment have been fully recognised alike by the specialist and the practitioner, and the results obtained have approximated in some cases even to the prophecy of its discoverer—that the death-rate from diphtheria would eventually be reduced to 5 per cent. In this country, however, no such unanimity of opinion prevails, and the detractors of the treatment, who deny its efficacy and even affirm that its use is accompanied by increased risk, are at any rate as numerous as are those who believe in its therapeutic value. In consequence of this conflict of opinion, and perhaps also because striking results were not obtained in the first cases which were subjected to the new treatment, medical practitioners as a body, in this country, have not used the new remedy in the very general and extended way in which it has come into operation abroad. Inasmuch as the introduction of the serum treatment on an extended scale elsewhere has been immediately followed by a most marked and unmistakeable decrease in the mortality from diphtheria it is absolutely necessary to make full inquiry into those causes which have tended to interfere with its general adoption in this country. This must no doubt be ascribed in part to the conservative instincts of our countrymen, and in part to a certain distrust of the application of the results of bacteriological investigation to the treatment of disease which originated in the failure of the tuberculin treatment of phthisis to justify the high claims put forward for it by Koch and certain other bacteriologists. It must, however, be recognised that still other causes have operated in this direction, since many practitioners who made a trial of the antitoxic serum treatment on its first introduction into this country were so dissatisfied by the absence of the striking results described in France and Germany that they soon abandoned it, and we now have the remarkable fact that there are at the present time large districts, both in England and in Scotland, where the serum treatment has practically passed out of use. For some time it has been suggested by those intimately acquainted with the question that this neglect of the remedy must be ascribed in great part at any rate to the quality of the serum manufactured and distributed in this country. In support of this contention they have pointed out that those who have obtained the most satisfactory results and who have been the warmest supporters of the serum treatment have been those who have been able to treat cases of diphtheria during the very early stages of the disease where even a small dose of weak serum is sufficient to check the course of the disease. In this connexion it has been shown on the Continent that the death-rate may be almost abolished among those cases treated during the second or third day of the disease; whilst the experiments, as regards the quantity of antitoxin necessary to save animals at different stages of the disease, afford still more striking evidence on this point.

Thus it has been shown by Wernicke and Behring[1] that it is necessary to inject ten times as much antitoxin into a guinea-pig that has received subcutaneously a lethal dose of diphtheria toxin eight hours previously, as when it is treated immediately after the injection of the toxin, whilst after twenty-four hours fifty times the initial quantity is necessary to effect a cure. That the importance of this fact is fully recognised is indicated quite clearly by Behring in the directions sent out with the serum prepared under his supervision. Thus he recommends as sufficient a dose of 600 normal antitoxin units (No. 1 phial, green label) "in cases where the serum treatment is commenced on the appearance of the first symptoms of the disease," whilst at a more advanced stage doses of 1000 (No. 2 phial, white label) or 1500 (No. 3 phial, red label) normal units are required. In the appended table (Table I.) the quantities of the English and foreign serums (purchased in this country in August, 1895) which it would be necessary to inject in order to ensure this dose of 1500 units being given. It will be observed that the table contains, in the case of Behring, a record of only the minimum dose of antitoxin sent out under his supervision. This was due to the fact that the English agents appeared at this time to stock only this quality, owing, perhaps, to the absence of demand for the more concentrated forms, some of which contain 1500 normal units in 6–7 c.c. of serum.

TABLE No. 1.

Source of serum.	Estimated number of units in bottle.	Quantity required for dose of 1500 units.
British Institute of Preventive Medicine (Sample No. 1)	600	75 c.c.
Burroughs, Wellcome, and Co. (Sample No. 2).... ...	240	187 c.c.
Bacteriological Institute, Leicester (Sample No. 1)...	100	300 c.c.
Behring, Hoechst, Germany (Sample No. 1)	600	15 c.c.
Schering, Berlin (Sample No. 2)	500	15 c.c.
Pasteur Institute, France (Sample No. 1)	450	33 c.c.

It is evident from the low antitoxic value of the English serums at this period that only such a dose as could be expected to be effective at the early stage of the disease could under ordinary circumstances be injected into a child, as it can readily be understood that in private practice, where no doubt the parents would regard the treatment as more or less of an experimental nature, the practitioner would hesitate to inject large quantities of the fluid. That this is the case is shown in the following table, in which a few of the cases recorded about this period are given.

TABLE No. 2.

Date of Illness.	Source of serum.	Dose injected and day of month.
April 13th, 1895.	British Institute of Preventive Medicine.	10 c.c., 21st.
May 3rd. ,,	Burroughs, Wellcome, and Co.	20 c.c , 5th + 20 c.c., 7th.
May 8th. ,,	Schering.	3·5 c.c. (1 drachm), 12th.
May 14th. ,,	Schering.	1·75 c.c. (½ drachm), 17th.
May 18th, ,,	Burroughs, Wellcome, and Co.	15 c.c., 20th + 10 c.c., 21st.
May 23rd. ,,	Schering.	1 c.c. (20 minims), 25th + 0·75 c.c. (15 minims, 28th + 0·5 c.c. (10 minims), 30th.
May 26th, ,,	British Institute of Preventive Medicine.	10 c.c., 30th.
May 27th, ,,	Burroughs, Wellcome, and Co.	15 c.c., June 2nd + 7·5 c.c. + 7·5 c.c., 3rd.
July 12th, ,,	British Institute of Preventive Medicine.	10 c.c. + 10 c.c., 14th + 10 c.c., 15th.

It has already been stated that serum of low antitoxic power, such as those on the market at this period, may have been very effective if given at a sufficiently early period of the disease. It must be remembered, however, that such serum could not be expected to exert a sufficiently marked influence on a case in a more advanced stage, and therefore a medical man who was testing the efficacy of

[1] Physiologische Gesellschaft, Berlin, 1895.

the new treatment in such a case would remain unconvinced of its value. Indeed, it appears, as was only natural, that the practitioner, on the introduction of the serum treatment, applied the new remedy to those more severe cases where the ordinary treatment is so uncertain—in fact, to precisely that type of case in which, as we now know, only the most powerful serums are effective. In consideration of these facts it appeared desirable to ascertain the relative strengths of the diphtheritic antitoxins which have been and are at present being distributed on the Continent and in this country. This appeared to us the more important, since the practitioner has not the same means at his command of ascertaining the presence of adulteration or absence of reputed strength which is possessed by him in the case of other drugs. Indeed, the methods of testing the antitoxic value of a serum are of such a nature that they can only be carried out by a trained bacteriologist in a properly equipped laboratory. This fact has been so fully recognised in Germany, where the treatment was first introduced, that the Government have instituted a State laboratory, of which Professor Ehrlich is now the head, for the express purpose of testing the antitoxins produced by manufacturers and certifying the strength of serum contained in each bottle, which is then sent out bearing the Government stamp and seal. The importance of this arrangement to both the general and the medical public cannot possibly be over estimated. We should appreciate at once the importance of the fact that a regiment of soldiers had been marched into a malarial district with a supply of quinine which had been so adulterated that the medical man was really introducing only one-fourth the quantity of the drug which he had prescribed owing to the presence of inert material. In the present state of our knowledge it is not too much to say that the influence exerted by the exhibition of antitoxin on diphtheria is at any rate quite as marked as that exerted by quinine on malaria.

During the past twelve months several samples of serum which have been sent to THE LANCET Offices for "review" together with others which were obtained on the market have been submitted to our Special Commissioners for the purpose of obtaining an analysis and report. Amongst these samples were those manufactured in this country, but in addition others were obtained from all the important sources of antitoxic serum in Germany, France, Belgium, and Switzerland. It is of importance to record the results of the earlier testings in order that there may be offered to the practitioner a probable explanation of his failure to obtain satisfactory results during the earlier part of that period and to encourage him to make a fresh trial of the serum treatment with the much more potent serums now at his disposal. We have considered it necessary to bring within the scope of the investigation all the serums which are at present on the British market, both of home and of foreign manufacture, in order that the relative strengths of the serums of the same approximate dates may be compared, so that practitioners may be assisted in the selection of the most suitable serum for use in the treatment of their cases as judged, not merely by the present absolute antitoxic value, but also by the constancy with which the strength of a serum corresponds with the claims put forward on its behalf. In order, further, that our readers may be made aware of and able to take advantage of any changes that may take place in the quality of the serums supplied we propose to report from time to time on their relative antitoxic values.

After the samples of serum came into our hands they were maintained at an equable temperature in an ice room carefully protected from the action of light. In the case of all the more recent samples which were purchased, duplicates with the same official mark were, wherever possible, obtained at the same time and set aside with the seal unbroken. This was done with the object of having unopened control specimens which might be subjected to analysis elsewhere, should those interested in the manufacture of any particular serum be dissatisfied with the estimation of the antitoxic strength arrived at in these experiments.

EXAMINATION OF SAMPLES.

In making any examination of antitoxic serum it is obviously necessary to consider the following points:—

1. The sterility of the serum and the absence or presence of antiseptics.

2. The quantity recommended by the vendors to be injected as a dose.

3. The antitoxic value of the serum, as estimated in normal units per c.c.

1. *Preservation of the serum.*—It is evident, of course, that if any organisms have found an entrance to the serum and have undergone multiplication therein we shall most probably find as a result of its exhibition an abcess at the site of injection and undesiraole constitutional disturbance. As the possibility of the entrance of germs during the manipulation of the serum can never be absolutely done away with, the makers who send out the serum without the addition of foreign substances seek to guard against this danger by stating that the serum should never be used unless it has remained perfectly limpid, and in one instance it is even suggested that "as a precautionary measure it is well to ascertain that the serum is free from any odour of putrefaction."

In most cases where no soluble antiseptic is used a small quantity of camphor is added as a preservative, but as this is found to be quite unreliable the directions as regards the examination for turbidity are also appended. Other manufacturers add a small quantity of a soluble antiseptic. Behring's serum is said to contain 0·5 per cent. of carbolic acid, while Schering's (Aronson's) serum has added to it 0·4 per cent. of trikresol. The dose recommended by Behring thus contains less than half a grain of carbolic acid, while Schering's contains a fraction over half a grain of trikresol. Such small quantities can, according to pharmacologists, exert no constitutional influence, whilst it must be remembered further that these bodies, by combining with the albuminoids of the serum, lose almost entirely their local irritating action. These additions appear to completely obviate the risk of contamination by germs, and the makers who adopt this method do not consider it necessary to make any reference to the danger of the serum undergoing putrefactive changes. Where very weak serum is being employed and large quantities have to be injected it is possible perhaps that these antiseptics might exert some influence, but it is known that where this has been necessary no such effect could be demonstrated. At the present time, however, when potent serum can be obtained there is no reason why such very large quantities should ever be injected. On the other hand, the unfortunate results following upon the injection of contaminated serum that have been recorded from time to time have usually resulted from the use of those antitoxins to which there has been no addition of a soluble antiseptic preservative agent. We have accordingly to choose between the entirely problematical disadvantage due to the presence of a trace of antiseptic and the possible danger arising from antiseptic precautions breaking down at some time or other, and a certain number of contaminated bottles or even a whole set passing into circulation.

2. *Dose of serum.*—There is no question that the factor of "dose" has exerted an all-important influence on the results obtained by the application of the serum treatment in this country, for, as we have shown above, the quantities of the serums on the market usually injected could not be expected to give the best results obtainable. As mentioned elsewhere Behring can supply doses of serum containing from 600 to 3000 immunity units in quantities not exceeding 5 to 6 c.c. which can always be injected with ease. At the same time an injection of 10 c.c. can usually be carried out without any difficulty or serious inconvenience, while the advantages of increasing the number of units introduced are so obvious that no objection need be taken to this quantity. As the antitoxin itself appears to exert little or no physiological action—the inconveniences which sometimes arise from the injection of serum being due not to the antitoxin but to other substances present in the serums from certain horses, which, however, act only on certain individuals—the larger the number of normal units injected the better. To be able to introduce these, however, at an early stage of the disease constitutes the great advantage of the more potent serums; it is indeed now generally recognised that the less active antitoxic serums should never be made use of, either in small or large doses, when the others can be obtained.

3. *Estimation of normal units present.*—The first method employed for the estimation of the strength of antitoxic serum was one which consisted in defining the proportion of serum in relation to the weight of the animal, which

would protect a guinea-pig against a lethal dose of culture or toxin of the diphtheria bacillus. This method is still made use of at the Pasteur Institute and by other makers, the strength of serum which they consider suitable for use in the treatment of diphtheria cases being one which contains sufficient antitoxin to protect an animal of from 50,000 to 100,000 times the weight of the serum. Such a serum is stated to contain from 10 to 20 normal units of Behring per c.c. The method which is now, however, usually employed, and which, we believe, will soon become universal, is that devised by Ehrlich and Behring. The principle of this method consists in estimating precisely the amount of serum required to *completely* neutralise the effects of ten *lethal* doses of diphtheria toxin when these have been mixed together previously to subcutaneous injection into a guinea-pig. It is obvious that the results obtained would vary greatly, according to the quantity of toxin that was taken as the lethal dose, since any excess or deficit in this is multiplied ten times over in the experiment. In addition, if an arbitrary standard were decided upon it would be essential to retain the toxin in an unaltered condition and to reproduce from other toxins by a process of titration a toxin of precisely similar strength. This problem had already confronted Behring in his experiments on tetanus poison. The tetanus toxin is liable to lose its strength very rapidly and thus the means of carrying out a series of comparative experiments was rendered impossible. Taking advantage of the fact, however, that the tetanus antitoxin retains its strength unaltered he made use of this as his standard. Having once obtained an antitoxin solution of which a given quantity sufficed to neutralise one lethal dose of tetanus poison on a mouse he could always estimate the strength of any toxin and make the required dilution. The lethal dose of toxin, however, is a purely arbitrary one, and the toxin could in all probability never have been reproduced in exactly the same strength, but for the fact that the antitoxin solution gives us the means of reproducing it, and from this a fresh standard antitoxin can again be obtained. This standard antitoxin he terms normal antitoxin and the corresponding toxin normal toxin. That the fixing of the lethal dose is more or less arbitrary is admitted by Behring, who states "that the normal solution is most carefully preserved, just as in Paris the metre measure is kept under all possible precautions." In the case of diphtheria the toxin is much more stable, but here, again, a normal antitoxin solution is also prepared, so that the one can always be tested against the other and by an *equivalence* of the two a double control exercised. The lethal dose of toxin was determined by estimating the amount of toxin required to kill per 1000 grammes weight of guinea-pig. Of this toxin ten times the amount required to kill a guinea-pig of from 200 to 300 grammes weight was injected together with the antitoxin to be tested and the effect observed. By noting the absence or presence of local reaction and the increase or loss of weight it is stated that an opinion may often be formed after twenty-four hours, but that after the lapse of forty-eight hours a decisive conclusion can always be arrived at. When the toxin is completely neutralised, as it should be, the animal should not only live, but there should be no trace of local reaction (œdematous swelling). This swelling may not be apparent in the first twenty-four hours, but a rapid fall in weight will at that time frequently indicate its probable occurrence within the next twenty-four hours. In this connexion it should be borne in mind that guinea-pigs, taken from stock and put into small cages, usually rise in weight when not injured by the action of the toxin.

A serum that contains one normal antitoxin unit per c.c. is one of such a strength that $\frac{1}{10}$th of a c.c. completely neutralises the action of ten lethal doses of toxin. Taking this as a basis of calculation it is easy to determine the number of antitoxin units contained per c.c. in any sample recorded in the tables, by simply dividing the fraction of a c.c. that protects by 10—e.g., when $\frac{1}{1000}$th of a c.c. of a serum protects, the serum contains 100 normal units per c.c.: when $\frac{1}{600}$th c.c. protects, the serum contains 60 normal units per c.c., and so on.

For the purpose of carrying out these testings a series of experiments were carried out on guinea-pigs to determine precisely the strength of the toxin employed. Below are given in tabular form the results of these experiments. As can be readily understood, it was often difficult to ascertain the precise time of death of the animal as they frequently succumbed during the night. However, by noting the condition during life and the temperature of the body after death, a fairly accurate opinion could be formed.

TABLE No. III.

Dose of toxin.	Weight of guinea-pig in grammes.	Animal lived.
$\frac{1}{10}$ c.c.	250	36-40 hours.
,,	495	40 ,,
$\frac{1}{15}$ c.c.	250	36-40 hours.
$\frac{1}{20}$ c.c.	250	36-40 hours.
,,	250	40 ,,
,,	265	47 ,,
,,	250	50 ,,
,,	200	51 ,,
,,	220	52 ,,
$\frac{1}{21}$ c.c.	250	40 hours.
,,	200	40 ,,
,,	265	47 ,,
,,	260	47 ,,
,,	250	56 ,,
,,	265	70 ,,
$\frac{1}{25}$ c.c.	285	56 hours.
,,	200	79 ,,
,,	255	84 ,,
$\frac{1}{30}$ c.c.	250	56 hours.
,,	265	79 ,,
,,	205	92 ,,
$\frac{1}{34}$ c.c.	285	46 hours.
,,	225	82 ,,
,,	265	120 ,,
$\frac{1}{40}$ c.c.	250	90 hours.
,,	200	98 ,,
,,	200	120 ,,

From these experiments it would appear that $\frac{1}{30}$th c.c. of this toxin was required to kill a guinea-pig of 250 grammes weight (0·2 c.c. per kilo.) with practical certainty in forty-eight hours. On using this toxin as normal toxin and titrating against this three samples of Behring's serum, which had been tested under Government control, we obtained in each case almost exactly the strength stated on the label. That is to say, as we had no normal toxin or antitoxin, we made use of samples of serum tested by Behring and Ehrlich as a standard. It is, of course, possible that these serums were stronger than was stated on the label, and, indeed, the results obtained with some other samples shown in our tables tend to support the view that our toxin was somewhat stronger than the normal toxin of Behring and Ehrlich. The error introduced in this way does not, however, appear to be a serious one, since it would affect the final estimation of the antitoxic value only by about one-tenth. Moreover, the absolute strength of the antitoxins is not the most important point to be decided, since the object of this inquiry is to indicate the relative strengths of the serums sent out by the different manufacturers, and as the experiments were all carried out with the same toxin under precisely similar conditions the statements made as regards comparative strengths of the serums examined will still hold good.[2]

At a late stage of this investigation we heard that the German Government was supplying normal toxin apparently for the purpose of enabling the German manufacturers to send out serum of uniform strength. We hoped to be able to obtain some of this normal toxin in order that we might be able to estimate the probable margin of error in our experiments, but as yet we have not been able to procure any. The placing on the market of this standardised test toxin will be of

[2] It is almost unnecessary to state that the strength of the toxin used in these experiments was determined at regular intervals in order to detect any appreciable loss of strength such as would have tended to vitiate the relative accuracy of the results obtained.

great value to all those concerned in the manufacture and testing of diphtheria antitoxin, and will, we hope, lead to the immediate adoption of Ehrlich's method of testing the serum in normal units. There will, at any rate, be no excuse in the future for the manufacturer who sends out serum containing a lower number of normal units than is stated on the label.

We shall now give the results of our analyses of the various samples of antitoxin purchased during the last twelve months. As those of English manufacture are the most important as far as this country is concerned we shall consider them first and then those of German, French, Belgian, and Swiss manufacture. As we have already stated, it is not claimed that the strengths computed and here recorded are absolute, they are given simply as exhibiting accurately the relative strengths of the serums compared.

BRITISH INSTITUTE OF PREVENTIVE MEDICINE,

101, GREAT RUSSELL-STREET, LONDON, W.C.

In the earlier samples of serum supplied by this institute camphor appears to have been added as a preservative, but we believe that no addition of any kind is now made to the serum. The first samples consisted of bottles containing 30 c.c., these were replaced by others containing 20 c.c., and still later, early in this year, by three smaller bottles, each of which contained 10 c.c. of antitoxic serum. The following are the directions inclosed for the use of the serum:—"The dose for a child weighing 20 lbs. is 20 c.c. for a severe case, 15 c.c. for a moderate, and 10 c.c. for a mild case. In a severe case 10 c.c. may be again inoculated after twelve hours, but in any case it is advisable to inject 10 c.c. twenty-four hours after the first inoculation. The dose is proportional to the gravity of the disease and not to the size of the patient." The first two samples examined are marked "immunity I.," but no strength is mentioned in connexion with the other serums. The results of the testings are given in the following tables:—

TABLE NO. IV.—*Sample No. 1.* Purchased August, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{100}$ c.c.	260 grms.	Marked swelling.	- 35 grms.	—	40 hours.
$\frac{1}{50}$ c.c.	250 ,,	,,	- 20 ,,	—	40 ,,
$\frac{1}{50}$ c.c.	255 ,,	,,	- 20 ,,	—	48 ,,
$\frac{1}{25}$ c.c.	250 ,,	Distinct swelling.	- 15 ,,	—	48 ,,
$\frac{1}{200}$ c.c.	275 ,,	None.	- 10 ,,	7 days.	—

* Official marks: "A. Immunity I. Price 1/6 for 30 c.c. Aug. 2, 1895." (1 bottle).

In this sample, according to our calculation, each c.c. would contain 20 normal units, which, multiplied by the contents of the bottle (30 c.c.), would give a dose of 600 normal units.

TABLE NO. V.—*Sample No. 2.* Purchased October, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{100}$ c.c.	250 grms.	Marked swelling.	- 30 grms.	—	40 hours.
$\frac{1}{50}$ c.c.	235 ,,	Distinct swelling.	None.	7 days.	—
$\frac{1}{50}$ c.c.	255 ,,	Swelling.	- 20 grms.	7 ,,	—
$\frac{1}{100}$ c.c.	205 ,,	None.	None.	7 ,,	—

* Official marks: "B. Immunity I. Price 1/6 for 30 c.c."

This sample was of somewhat greater strength than the previous one examined—i.e., 22·5 normal units per c.c. and 30 c.c. in bottle, giving a total of 675 units. Both these samples are marked "immunity I.," and it is probable that their antitoxic value has been estimated by the same method, as their strengths agree so closely.

TABLE NO. VI.—*Sample No. 3. Purchased December, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{100}$ c.c.	230 grms.	Marked swelling.	- 30 grms.	—	4th day.
$\frac{1}{100}$ c.c.	250 ,,	Distinct swelling.	None.	7 days.	—
$\frac{1}{100}$ c.c.	250 ,,	,,	+ 5 grms.	7 ,,	—
$\frac{1}{200}$ c.c.	230 ,,	None.	+ 5 ,,	7 ,,	—
$\frac{1}{200}$ c.c.	230 ,,	,,	+ 20 ,,	7 ,,	—

This serum, we calculate, contains 35 normal units per c.c., and as the bottle appears to have contained 20 c.c., the dose would consist of about 700 units.

TABLE NO. VII.—*Sample No. 4.* Purchased March, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{1000}$ c.c.	260 grms.	Swelling.	- 5 grms.	7 days.	—
$\frac{1}{100}$ c.c.	200 ,,	Swelling?	- 5 ,,	7 ,,	—
$\frac{1}{200}$ c.c.	250 ,,	None.	None.	7 ,,	—

* Official marks: "Serum for diphtheria, 30 c.cm., 16 Mar., 1896."

In this case we take 95 units as representing the number of antitoxic units present per c.c. as the experiment with the dilution of $\frac{1}{95}$ indicated that we were just on the limit of efficacy. The bottle of 10 c.c. of serum accordingly contains 950 normal units. Three of these tubes are sent out in each box.

TABLE NO. VIII.—*Sample No. 5.* Purchased May, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{1000}$ c.c.	260 grms.	Marked swelling.	- 30 grms.	—	40 hours.
$\frac{1}{200}$ c.c.	250 ,,	Distinct swelling.	- 35 ,,	—	48 ,,
$\frac{1}{100}$ c.c.	220 ,,	,,	- 30 ,,	—	40 ,,
$\frac{1}{100}$ c.c.	250 ,,	None.	- 10 ,,	7 days	—

* Official marks: "Serum for diphtheria, 30 c.cm., 18 Apr., 1896."

The serum in this sample contains 80 units per c.c. and the bottle of 10 c.c. a dose of 800 units. Here, again, there are three bottles in the box.

TABLE NO. IX.—*Sample No. 6.* Purchased July, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{200}$ c.c.	240 grms.	Distinct swelling.	- 35 grms.	—	7th day.
$\frac{1}{100}$ c.c.	230 ,,	Marked swelling.	- 20 ,,	7 days.	—
$\frac{1}{100}$ c.c.	305 ,,	Distinct swelling.	- 25 ,,	7 ,,	—
$\frac{1}{200}$ c.c.	280 ,,	None.	+ 5 ,,	7 ,,	—

* Official marks: "30 c.cm., 23 Jun., 1896."

The serum in this sample contains 70 units per c.c., which represents a dose of 700 units in a bottle of 10 c.c. Three such bottles are sent out in each box.

In the following table we give in collected form the

strengths of serums analysed during the twelve months and the number of antitoxic units present in the bottle of serum.

TABLE No. X.—*Estimated Strengths of Samples of Serums 1895–1896 (British Institute of Preventive Medicine, London).*

Sample number.	Normal units estimated per c.c.	Contents of bottle.	Units estimated in contents.
1.	20·0	30 c.c.	600
2.	22·5	30 c.c.	675
3	35·0	20 c.c. (?)	700
4.	95·0	10 c.c.	950
5.	80·0	10 c.c.	800
6.	70·0	10 c.c.	700

From this table it would appear that the strength of this serum increased steadily from August, 1895, to March, 1896, but that since that date it has fallen somewhat in antitoxic value. The number of units contained in a bottle has varied from 600 to 950, and the quantity to be injected from 10 c.c. to 30 c.c.

BURROUGHS, WELLCOME AND CO.,
SNOW HILL BUILDINGS, LONDON.

This serum is prepared under the supervision of Mr. T. J. Bokenham and each bottle bears his signature. In the case of this serum camphor seems, in some of the samples, at any rate, to have been made use of as a preservative, but too much reliance does not appear to have been laid on its antiseptic action since it is insisted that "as a precautionary measure it is well to ascertain that the serum is free from any odour of putrefaction before injecting it; any such odour would indicate that the serum has changed through improper exposure." The bottles first sent out contained 0 c.c., the dose recommended being 10 c.c. in a mild and 20 c.c. in a severe case. The first three samples are marked "immunity 0005"; the other samples, which were purchased after Dec. 11th, 1895, are said to contain 600 units (Behring). The antitoxin is sent out in two forms, as the ordinary fluid serum and as a dry powder, which it is directed should be dissolved in 2 or 3 c.c. of sterile water. The dry serums were dissolved in 10 c.c. of sterile water and the number of units per c.c. estimated as in the case of the fluid serums. The results of our analyses are given in the following tables:—

TABLE No. XI.—*Sample No. 1 (Dry).* Purchased June, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{200}$ c.c.	255 grms.	Marked swelling.	– 30 grms.	—	40 hours.
$\frac{1}{100}$ c.c.	260 ,,	Swelling.	– 20 ,,	7 days.	—
$\frac{1}{50}$ c.c.	260 ,,	None.	+ 20 ,,	7 ,,	—

* Official marks: "Date 21·6. Horse No. 1. ·0005. K."

This sample apparently contains 40 normal units of antitoxin in the dose.

TABLE No. XII *Sample No 2.* Purchased August, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{200}$ c.c.	280 grms.	Marked swelling.	– 30 grms.	—	40 hours.
$\frac{1}{100}$ c.c.	285 ,,	,,	– 35 ,,	—	4th day.
$\frac{1}{100}$ c.c.	280 ,,	Distinct swelling.	– 20 ,,	7 days.	—
$\frac{1}{50}$ c.c.	280 ,,	Swelling.	– 25 ,,	7 ,,	—
$\frac{1}{50}$ c.c.	245 ,,	None.	+ 5 ,,	7 ,,	—

* Official marks: "Date 19 7. Horse No. 15. Immunity ·0005."

This serum contains 8 antitoxin units per c.c. and 240 units in the bottle, which contains 30 c.c. of serum.

TABLE No. XIII.—*Sample No. 3 * Purchased October, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{200}$ c.c.	255 grms.	Marked swelling.	– 15 grms.	—	40 hours.
$\frac{1}{100}$ c.c.	300 ,,	Distinct swelling.	– 20 ,,	7 days.	—
$\frac{1}{100}$ c.c.	270 ,,	None.	– 5 ,,	7 ,,	—

* Official marks: "Date 3·10. Immunity ·0005."

This serum contains 10 normal units per c.c., or 300 units in the bottle of 30 c.c.

TABLE No XIV.—*Sample No. 4.* Purchased December, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{100}$ c.c.	300 grms.	Marked swelling.	– 30 grms.	—	48 hours.
$\frac{1}{50}$ c.c.	290 ,,	,,	– 30 ,,	—	3rd day.
$\frac{1}{25}$ c.c.	250 ,,	,,	– 20 ,,	7 days.	—
$\frac{1}{10}$ c.c.	265 ,,	None.	– 10 ,,	7 ,,	—

* Official marks: "Date of issue, 12 12 95. Immunity 600 units. O."

This serum contains 3 normal units per c.c., so that in the bottle, which apparently contains 15 c.c., there would be 45 units.

TABLE No. XV.—*Sample No. 5 (Dry).* Purchased December, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{100}$ c.c.	200 grms.	Distinct swelling.	15 grms.	7 days.	—
$\frac{1}{50}$ c.c.	255 ,,	None.	None.	7 ,,	—

* Official marks: "600 units. E. Tested 16th Dec., '95."

The dose of serum in this instance would appear to contain between 300 and 400 normal units of antitoxin.

TABLE No. XVI.—*Sample No. 6 (Dry).* Purchased January, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{100}$ c.c.	255 grms.	Marked swelling.	– 25 grms.	7 days.	—
$\frac{1}{50}$ c.c.	215 ,,	None.	+ 10 ,,	7 ,,	—
$\frac{1}{50}$ c.c.	265 ,,	,,	+ 20 ,,	7 ,,	—

* Official marks: "6.0 units. R. Tested Jan. 4, '96."

This sample appears to contain 75 normal units of antitoxin.

TABLE No. XVII.—*Sample No 7.* Purchased March, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{200}$ c.c.	280 grms.	Swelling.	– 15 grms.	—	24 hours.
$\frac{1}{200}$ c.c.	275 ,,	Marked swelling.	– 30 ,,	—	40 ,,
$\frac{1}{100}$ c.c.	275 ,,	Distinct swelling.	– 10 ,,	—	6th day.
$\frac{1}{100}$ c.c.	285 ,,	None.	+ 5 ,,	7 days.	—

* Official marks: "This phial contains 600 immunity units (Behring). Tested March 28, 1896. R."

This sample contains 10 normal units per c.c; in the bottle which contains 13 c.c. there are 130 units.

TABLE No. XVIII.—*Sample No. 8.* Purchased May, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{500}$ c.c.	260 grms.	Swelling.	- 25 grms.	—	40 hours.
$\frac{1}{250}$ c.c.	285 ,,	,,	- 30 ,,	—	40 ,,
$\frac{1}{100}$ c.c.	220 ,,	Distinct swelling.	- 20 ,,	—	6th day.
$\frac{1}{100}$ c.c.	260 ,,	None.	- 15 ,,	7 days.	—

* Official marks: "This phial contains 600 immunity units (Behring). Tested 22 Apl., '96. E."

The serum in this bottle contains 10 normal units per c.c., which, multiplied by 10, the number of c.c. contained in the bottle, gives 100 units.

TABLE No. XIX.—*Sample No. 9 (Dry).* Purchased May, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{500}$ c.c.	250 grms.	Marked swelling.	- 40 grms.	—	40 hours.
$\frac{1}{400}$ c.c.	285 ,,	,,	- 40 ,,	—	36 ,,
$\frac{1}{100}$ c.c.	250 ,,	,,	- 15 ,,	7 days.	—
$\frac{1}{75}$ c.c.	200 ,,	Distinct swelling.	- 5 ,,	7 ,,	—
$\frac{1}{50}$ c.c.	200 ,,	None.	- 5 ,,	7 ,,	—

* Official marks: "This tube contains 600 units, or one therapeutic dose. Tested 5 May, 1896. Q."

The number of antitoxin units contained in the whole of this sample is 60.

TABLE No. XX.—*Sample No. 10.* Purchased July, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{500}$ c.c.	235 grms.	Distinct swelling.	20 grms.	—	48 hours.
$\frac{1}{250}$ c.c.	200 ,,	—	—	—	40 ,,
$\frac{1}{100}$ c.c.	310 ,,	Distinct swelling.	35 grms.	—	4th day.
$\frac{1}{100}$ c.c.	260 ,,	None.	- 5 ,,	7 days.	—

* Official marks: "This phial contains 600 immunity units (Behring). Tested 28 May, 1896, K."

This sample of serum contains 10 normal antitoxic units, and the 10 c.c. contained in the bottle 100 antitoxin units.

TABLE No. XXI.—*Sample No. 11 (Dry).* Purchased July, 1896.*

Quantity of antitoxin injected.	Weight of guinea pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{125}$ c.c.	235 grms.	Marked swelling.	- 15 grms.	7 days.	—
$\frac{1}{100}$ c.c.	250 ,,	None.	+ 5 ,,	7 ,,	—

* Official marks: "This tube contains 600 units, or one therapeutic dose. Tested 26 May, 1896. H."

This sample appears to contain 100 antitoxin units.

We give in the following table in collected form the strengths of the serums purchased during the last twelve months and the number of normal units present in each:—

TABLE No. XXII.—*Estimated Strengths of Samples of Serums, 1895-1896 (Burroughs, Wellcome, and Co., London).*

Sample number.	Normal units estimated per c.c.	Contents of bottle.	Units estimated in contents.	Units claimed by makers in contents.
1.	4·0	Dry.	40	—
2.	8·0	30 c.c.	240	—
3.	10·0	30 c.c.	300	—
4.	3·0	15 c.c.	45	600
5.	30·0	Dry.	300	600
6.	7·5	Dry.	75	600
7.	10·0	13 (?)	130	600
8.	10·0	10 c.c.	100	600
9.	6·0	Dry.	60	600
10.	10·0	10 c.c.	100	600
11.	10·0	Dry.	100	600

As will be seen from this table the number of normal units present in a c.c. of liquid serum varied from 3 to 10, and the number present in a dose from 45 to 300. In the case of the dried serum the amount present in a dose varied from 40 to 300 normal antitoxin units. In no instance does the dose contain 600 normal units, as claimed, and in some cases the discrepancy between the two sets of figures is very striking.

LEICESTER BACTERIOLOGAL INSTITUTE,

STANLEY-ROAD, LEICESTER.

IN the case of this serum camphor is used as a preservative, and it is again insisted that "should any turbidity be noticed in the serum it should not be used." The antitoxin is supplied in bottles containing 20 c.c. of serum. The strength of these antitoxins is not stated in antitoxin units, but the first two were marked "Immunity ·001"; the third "Immunity ·0002"; while the fourth, fifth, and sixth were marked "Immunity ·0005." In the following tables we give the results of our analyses:—

TABLE No. XXIII.—*Sample No. 1.* Purchased August, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{100}$ c.c.	300 grms.	Marked swelling.	40 grms.	—	48 hours.
$\frac{1}{75}$ c.c.	245 ,,	,,	- 40 ,,	—	3rd day.
$\frac{1}{50}$ c.c.	260 ,,	Distinct swelling.	+ 5 ,,	7 days.	—
$\frac{1}{50}$ c.c.	280 ,,	None.	+ 15 ,,	7 ,,	—

* Official marks: "Dose, 20 c.c. Immunity ·001. Price 1/6."

This sample of serum contains 5 normal antitoxin units per c.c., which, multiplied by the number of c.c. in the bottle (20 c.c.), gives a total of 100 antitoxin units.

TABLE No. XXIV.—*Sample No. 2.* Purchased October, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{100}$ c.c.	265 grms.	Swelling	- 15 grms.	—	24 hours.
$\frac{1}{100}$ c.c.	295 ,,	Marked swelling.	- 30 ,,	—	48 ,,
$\frac{1}{50}$ c.c.	265 ,,	Swelling (?)	+ 10 ,,	7 days.	—
$\frac{1}{50}$ c.c.	255 ,,	None.	+ 15 ,,	7 ,,	—

* Official marks: "Dose, 20 c.c.; immunity ·001. Price 1/6."

This sample is apparently of the same strength as the previous one.

TABLE XXV.—*Sample No. 3.* Purchased December, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{10}$ c.c.	275 grms.	Marked swelling.	− 25 grms.	—	40 hours.
$\frac{1}{15}$ c.c.	255 ,,	,,	− 25 ,,	—	40 ,,
$\frac{1}{20}$ c.c.	270 ,,	Swelling.	− 30 ,,	—	40 ,,
$\frac{1}{30}$ c.c.	250 ,,	Marked swelling.	− 15 ,,	—	40 ,,
$\frac{1}{50}$ c.c.	270 ,,	Distinct swelling.	− 10 ,,	—	3rd day.
$\frac{1}{75}$ c.c.	295 ,,	,,	− 30 ,,	—	48 hours.

* Official marks: "Dose, 20 c.c.; immunity, ·0002. 1/6."

In this case we did not consider it necessary to proceed further with the analysis, but have credited the sample with 1 antitoxin unit per c.c., although we were unable to demonstrate the presence of even such an amount.

TABLE No. XXVI.—*Sample No. 4.* Purchased April, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 46 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{100}$ c.c.	290 grms.	Marked swelling.	− 20 grms.	—	48 hours.
$\frac{1}{50}$ c.c.	265 ,,	,,	− 25 ,,	—	40 ,,
$\frac{1}{25}$ c.c.	280 ,,	None.	None.	7 days	—

* Official marks: "Dose, 10—20 c.c. Immunity ·0005. 1/6."

This sample is of the same antitoxic strength as samples Nos. 1 and 2 of this series.

TABLE No. XXVII.—*Sample No. 5.* Purchased May, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{10}$ c.c.	280 grms.	Distinct swelling.	None	7 days.	—
$\frac{1}{15}$ c.c.	205 ,,	None.	,,	7 ,,	—
$\frac{1}{100}$ c.c.	255 ,,	,,	+ 5 grms.	7 ,,	—

* Official marks: "Dose, 10—20 c.c., immunity ·0005. 3/-."

This sample contains 12·5 normal antitoxin units per c.c. of serum, which multiplied by the number of c.c. in the bottle (20 c.c.) gives a total of 250 units in the dose.

TABLE No. XXVIII.—*Sample No. 6.* Purchased July, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{10}$ c.c.	305 grms.	Marked swelling.	− 25 grms.	—	48 hours.
$\frac{1}{15}$ c.c.	295 ,,	,,	− 25 ,,	—	48 ,,
$\frac{1}{50}$ c.c.	225 ,,	None.	− 10 ,,	7 days.	—
$\frac{1}{100}$ c.c.	230 ,,	,,	− 10 ,,	7 ,,	—

* Official marks: "Dose, 10—20 c.c.; immunity ·0005. 3/-."

This sample contains 20 normal antitoxin units per c.c., which, multiplied by the number of c.c. of serum in the bottle (20 c.c.), gives a total of 400 units.

We give in the appended table the strengths of serum and number of antitoxin units sent out per bottle during the twelve months from August, 1895, to July, 1896:—

TABLE No. XXIX.—*Estimated Strengths of Samples of Serums, 1895–1896 (Bacteriological Institute, Leicester).*

Sample number.	Normal units estimated per c.c.	Contents of bottle.	Units estimated in contents.
1.	5·0	20 c.c.	100
2.	5·0	20 c.c.	100
3.	1·0 (?)	20 c.c.	20 (?)
4.	5·0	20 c.c.	100
5.	12·5	20 c.c.	250
6.	20	20 c.c	400

In these six samples the number of units present in a c.c. varied from 1 to 20, and the number of units in the bottle from 20 to 400. In the case of sample No. 3, which did not contain a single normal unit per c.c., numerous liquefying and non-liquefying colonies were found in the gelatin culture plate made from the sample when it was first opened, and the remarkable result obtained may perhaps be ascribed to the presence of these micro-organisms.

MEISTER LUCIUS AND BRÜNING.

HOECHST-ON-MAIN, GERMANY.

(Approved of by Professor Behring and Professor Ehrlich.)

This antitoxin is prepared by Dr. Libbertz under the supervision of Professor Behring and Professor Ehrlich by whom it is tested both as to its innocuousness and its remedial value. Moreover its preparation, the estimation of its activity, and the sterility of the serum are subject to State control. As a preservative 0·5 per cent. carbolic acid is added to this serum; this renders the fluid somewhat opalescent. It is recommended that the serum be protected from the light and kept in a cool place and it is stated that under these conditions it will remain active for at least twelve months. During 1895 the serum was sent out of such a strength that not less than 100 normal units were present in 1 c.c., the quantity to be injected increasing with the number of units required. At this period a serum was also sometimes sent out containing 250 units per c.c., and in March, 1896, another advance was made when it was announced that no serum containing less than 250 units would, in future, be supplied. At the same time a new series of stronger antitoxins spoken of as Behring's "extra potent diphtheria remedy," in which 500 to 600 normal units were present in a c.c., was sent out in doses varying from 600 to 3000 units. It is now recommended that 600 units should be used in those cases in which the serum treatment is adopted at the commencement of the disease. More advanced cases require 1000 to 1500 units, while severe cases should receive 2000 to 3000 units. As the extra potent serum does not appear at present to be stocked by the English agents we have not brought it under the scope of the investigation, but no doubt this serum will be stocked as soon as a sufficient demand for it arises.

In the following tables are given the results obtained in our testings of these serums:—

TABLE XXX.—*Sample No. 1.* Purchased August, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{1000}$ c.c.	260 grms.	None (?)	− 10 grms.	7 days.	—

* Official marks: "Füllung, 6 c.cm., 100 fach. Tested 6 July, 1895."

In this sample the number of units present per c.c. agrees precisely with that stated on the label and the dose contained in the bottle (6 c.c.) is 600 units.

TABLE No. XXXI.—*Sample No. 2.* Purchased October, 1895.*

Quantity of anti-toxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{1000}$ c.c.	270 grms.	None.	+ 25 grms.	7 days.	—

* Official marks: "6 c.cm. of 100 times normal strength = 600 normal units. Op. 296."

This sample appears to be similar to No. 1, and its strength comes up to the claims made on its behalf.

TABLE No. XXXII.—*Sample No. 3.* Purchased December, 1895.*

Quantity of anti-toxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{1000}$ c.c.	275 grms.	Marked swelling.	- 10 grms.	7 days.	—
$\frac{1}{500}$ c.c.	270 ,,	Distinct swelling.	- 15 ,,	7 ,,	—
$\frac{1}{500}$ c.c.	260 ,,	None.	+ 10 ,,	7 ,,	—

* Official marks: "6 c.cm. of 100 times normal strength = 600 normal units. Op. No. 254."

In this sample we estimate the strength as being one-tenth less than that claimed for it, there being 90 units instead of 100 present per c.c. and 540 instead of 600 normal units in the dose.

TABLE XXXIII.—*Sample No. 4* Purchased May, 1896.*

Quantity of anti-toxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{1000}$ c.c.	275 grms.	Marked swelling.	20 grms.	—	48 hours.
$\frac{1}{500}$ c.c.	245 ,,	Distinct swelling.	15 ,,	—	48 ,,
$\frac{1}{500}$ c.c.	215 ,,	,,	30 ,,	—	48 ,,
$\frac{1}{250}$ c.c.	310 ,,	,,	30 ,,	—	48 ,,
$\frac{1}{250}$ c.c.	315 ,,	None.	5 ,,	7 days.	—

* Official marks: "Füllung, 2 c.c., 100 fach. Officially tested, Feb. 8th, 1896. Op. No. 161. O."

The estimated strength of the serum in this case is one-fourth less than that which is claimed for it by the makers. It may be pointed out, however, that, owing to the small quantity of serum originally present in the bottle (2 c.c.), only very small quantities (one-tenth of a c.c.) could be taken for our dilutions, and thus the possibility of experimental error is considerably increased. This serum seems also to have been stocked by the agents or vendors for fifteen months before it was sent out.

TABLE XXXIV.—*Sample No. 5.* Purchased May, 1896.*

Quantity of anti-toxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{1250}$ c.c.	265 grms.	Marked swelling.	- 10 grms.	—	3rd day.
$\frac{1}{1000}$ c.c.	265 ,,	Distinct swelling.	None.	—	5th ,,
$\frac{1}{1000}$ c.c.	270 ,,	None.	+ 5 grms.	7 days.	—

* Official marks: "No. 222, Op. 396; officially tested, Dec. 21st, 1895. Füllung, 10 c.c., 100 fach = 1000 normal units. II."

The results obtained by our testing in the case of this sample agree with the claims put forward by the makers.

TABLE No. XXXV.—*Sample No. 6.* Purchased May, 1896.*

Quantity of anti-toxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{1000}$ c.c.	275 grms.	Marked swelling.	- 20 grms.	—	3rd day.
$\frac{1}{750}$ c.c.	265 ,,	Distinct swelling.	+ 10 ,,	—	4th ,,
$\frac{1}{500}$ c.c.	270 ,,	None.	+ 5 ,,	7 days.	—

* Official marks: "No. 260. Op. No. 434. Officially tested 12 Marz, '96. Füllung 6 c.c. 250 fach = 1500 normal units. III."

The results of our testings again agree with the claims of the makers. The sample contains 250 units per c.c. and 1500 normal units in the dose of 6 c.c.

TABLE No. XXXVI.—*Sample No. 7.* Purchased May, 1896.*

Quantity of anti-toxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{500}$ c.c.	265 grms.	None.	+ 15 grms.	7 days.	—

* Official Marks: "No. 263. Op. No. 437. Officially tested, 3 Apr. '96. Füllung, 2·4 c.cm., 250 fach = 600 normal units. I."

This sample also comes up to the standard claimed for it by the makers, containing 250 units in each c.c.

TABLE No. XXXVII.—*Sample No. 8.* Purchased July, 1896.*

Quantity of anti-toxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{1500}$ c.c.	235 grms.	Distinct swelling.	15 grms.	7 days.	—
$\frac{1}{1250}$ c.c.	215 ,,	None.	- 15 ,,	7 ,,	—

* Official marks: "6 c.cm. of 250 times normal strength = 1500 normal units. Prepared and filled under State control. No. 268. Officially tested 2nd May, '96. Op. No. 442." III.

In this sample our estimated strength is one-tenth lower than that claimed for it by the makers, there being 225 instead of 250 units present per c.c., and accordingly 1350 units in the dose instead of 1500.

TABLE No. XXXVIII.—*Sample No. 9.* Purchased July, 1896.*

Quantity of anti-toxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{500}$ c.c.	255 grms.	None.	+ 15 grms.	7 days.	—
$\frac{1}{250}$ c.c.	250 ,,	,,	None.	7 ,,	—

* Official marks: "2·4 c.cm. of 250 times normal strength = 600 normal units. Op. No. 448, prepared and filled under State control. No. 274. Officially tested 9 June, '96. I."

The estimated strength in this case is at least fully up to that indicated by the figures given on the bottle, there being 250 units in the c.c. and 600 units in the dose.

We give in the following table the estimated and reputed

strengths of the serums collected during the last twelve months.

TABLE No. XXXIX.—*Estimated Strengths of Samples of Serums, 1895–96 (Meister Lucius and Brüning, Hoechst-on-Main).*

Sample number.	Normal units estimated per c.c.	Contents of bottle.	Units estimated in contents.	Units claimed by makers in contents.
1.	100	6·0 c.c.	600	600
2.	100	6·0 c.c.	600	600
3.	90	6·0 c.c.	540	600
4.	70	2·0 c.c.	140	200
5.	100	10·0 c.c.	1000	1000
6.	250	6·0 c.c.	1500	1500
7.	250	2·4 c.c.	600	600
8.	225	6·0 c.c.	1350	1500
9.	250	2·4 c.c.	600	600

The estimated strengths as given in this table agree so closely with those claimed for them by the makers that, except in the case of Sample No. 4, the differences may almost be regarded as coming within the range of experimental error.

E. SCHERING,

CHEMISCHE FABRIK AUF ACTIEN, BERLIN.

(Agents, A. and M. Zimmermann, London.)

This serum is manufactured under the supervision of Hans Aronson, M.D., and is also under Government control. The earlier samples obtained do not appear to have been prepared under Government supervision as seems now to be the case. The method of testing the strength was also different in these earlier samples and only a serum of one uniform strength was supplied. This serum was said to be of such a strength that $\frac{1}{100}$ c.c. neutralised the quantity of diphtheria poison which suffices to kill a guinea-pig weighing 300 grms. in about twenty-four hours, and a large animal (of 600 to 700 grms. weight) in about forty-eight hours. It was recommended to use 5 c.c. of this serum for an early case of diphtheria and 10 c.c. for a more advanced and severe one. It is now manufactured under Government supervision and is sent out with the number of normal units per c.c., as tested by Ehrlich and Behring's method, marked on the label. This serum is supplied in two strengths, one containing 100 units, the other 200 units per c.c. The antitoxin fluid contains 0·4 per cent. trikresol solution added for the purpose of preserving it. The activity of this serum is said to remain unaltered for at least two years. The results of our analyses are given in the following tables:—

TABLE No. XL.—*Sample No. 1.* Purchased May, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{10}$ c.c.	260 grms.	Distinct swelling.	− 5 grms.	—	5th day.
$\frac{1}{20}$ c.c.	225 ,,	Swelling.	− 35 ,,	—	3rd day.
$\frac{1}{30}$ c.c.	236 ,,	Marked swelling.	− 10 ,,	7 days.	—
$\frac{1}{70}$ c.c.	305 ,,	None.	+ 5 ,,	7 ,,	—

* Official marks: "5 c.cm. A."

This sample contains 75 units per c.c. and 375 units in the dose.

TABLE No. XLI.—*Sample No. 2.* Purchased August, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{110}$ c.c.	270 grms.	Marked swelling.	− 30 grms.	—	7th day.
$\frac{1}{200}$ c.c.	275 ,,	None.	− 5 ,,	7 days.	—
$\frac{1}{30}$ c.c.	235 ,,	,,	+ 5 ,,	7 ,,	—

* Official marks: "5 c.cm. I.E., 100. No. 11. 7/6/95."

This sample contains 100 units per c.c. and 500 normal units in the dose of 5 c.c. of the serum as claimed by the maker.

TABLE No. XLII.—*Sample No. 3.* Purchased December, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{1000}$ c.c.	275 grms.	Swelling.	− 20 grms.	—	48 hours.
$\frac{1}{50}$ c.c.	215 ,,	Distinct swelling.	− 15 ,,	7 days.	—
$\frac{1}{150}$ c.c.	250 ,,	None.	+ 15 ,,	7 ,,	—

* Official marks: "5 c.cm. I.E., 100. No. 42. 30/11/95."

The serum in this sample appears to contain 75 normal units per c.c. instead of a 100 units as claimed by the makers, and 375 normal units in a dose instead of the 500 units.

TABLE No. XLIII.—*Sample No. 4.* Purchased February, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{1100}$ c.c.	255 grms.	Marked swelling.	− 20 grms.	—	48 hours.
$\frac{1}{1000}$ c.c.	285 ,,	Distinct swelling.	− 25 ,,	—	48 ,,
$\frac{1}{800}$ c.c.	250 ,,	,,	− 30 ,,	—	5th day.
$\frac{1}{800}$ c.c.	235 ,,	Marked swelling.	− 30 ,,	—	3rd ,,
$\frac{1}{150}$ c.c.	300 ,,	,,	− 5 ,,	7 days.	—
$\frac{1}{150}$ c.c.	245 ,,	None.	− 10 ,,	7 ,,	—

* Official mark: "5 c.cm. I.E., 100. No. 61. 25/2/96."

The serum in this sample appears to contain 70 normal units per c.c. instead of 100 units as claimed, and 350 normal units in the dose of 5 c.c. instead of 500 units.

TABLE XLIV.—*Sample No. 5.* Purchased May, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{1000}$ c.c.	270 grms.	Marked swelling.	− 30 grms.	—	30 hours.
$\frac{1}{800}$ c.c.	230 ,,	,,	− 10 ,,	7 days.	—
$\frac{1}{700}$ c.c.	290 ,,	,,	− 15 ,,	7 ,,	—
$\frac{1}{450}$ c.c.	230 ,,	,,	− 20 ,,	7 ,,	—
$\frac{1}{450}$ c.c.	205 ,,	None.	− 10 ,,	7 ,,	—

* Official marks: "5 c.cm. I.E., 100. No. 62. 12/3/96."

This sample appears to contain 60 normal units per c.c. instead of 100 units as claimed, and 300 normal units in the dose of 5 c.c. instead of 500 units.

TABLE No. XLV.—*Sample No. 6.* Purchased July, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{800}$ c.c.	270 grms.	Distinct swelling.	− 20 grms.	7 days.	—
$\frac{1}{450}$ c.c.	225 ,,	None.	− 5 ,,	7 ,,	—

* Official marks: "5 c.cm. I.E. 100. No. 65. 2/5/96."

This sample appears to contain 80 normal units per c.c. of serum instead of 100 units as claimed, and 400 units instead of 500 in the dose of 5 c.c.

TABLE No. XLVI.—*Sample No. 7.* Purchased July, 1896.*

Quantity of anti-toxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{2000}$ c.c.	305 grms.	Swelling.	- 35 grms.	—	4th day.
$\frac{1}{1750}$ c.c.	205 ,,	None.	+ 20 ,,	7 days.	—
$\frac{1}{1500}$ c.c.	290 ,,	None.	+ 10 ,,	7 ,,	—

* Official marks: "5 c.cm. Each 200 units = 1000 units. Behrings. I.E. 200. No. 60. 14/2/96."

This sample appears to contain 175 normal units per c.c. of serum instead of 200 units as claimed, and 875 units in the dose of 5 c.c. instead of 1000 units.

In the following table are given the strengths of the different samples collected during the last twelve months:—

TABLE No. XLVII.—*Estimated Strengths of Samples of Serum, 1895–1896 (E. Schering, Berlin).*

Sample number.	Normal units estimated per c.c.	Contents of bottle.	Units estimated in contents.	Units claimed by makers in contents.
1.	75	5 c.c.	375	—
2.	100	5 c.c.	500	500
3.	75	5 c.c.	375	500
4.	70	5 c.c.	350	500
5.	60	5 c.c.	300	500
6.	80	5 c.c.	400	500
7.	175	5 c.c.	875	1000

From these figures it will be seen that the strength estimated is only on one occasion equal to that claimed by the makers, and that as a rule we make them about one-fourth lower than the strength stated on the label.

E. MERCK, DARMSTADT.

This serum, which is made in Germany, is not manufactured under Government control as in the case of the other two serums produced in that country. It is sent out in two strengths, one said to contain 100 units (I.E.) per c.c. and the other 200 units (I.E.) per c.c., and doses of 1000 units should accordingly be obtained in 5 c.c. or 10 c.c. respectively. As in the case of Behring's serum, 0·5 per cent. carbolic acid is added for its preservation. There are no distinguishing marks attached to the bottles by means of which we can determine any difference in origin or the time they have been kept in stock. It is impossible, accordingly, to say whether the samples obtained at different times originated from one stock or represented different lots of serum.

We give in the following tables our estimates of the antitoxic strengths of the samples purchased during the last six months.

TABLE No. XLVIII.—*Sample No. 1.* Purchased January, 1896.*

Quantity of anti-toxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{1500}$ c.c.	250 grms.	Marked swelling.	- 20 grms.	—	2nd day.
$\frac{1}{750}$ c.c.	250 ,,	,,	- 25 ,,	—	,,
$\frac{1}{500}$ c.c.	270 ,,	,,	- 20 ,,	—	,,
$\frac{1}{400}$ c.c.	290 ,,	,,	- 25 ,,	—	,,
$\frac{1}{300}$ c.c.	300 ,,	,,	- 35 ,,	—	3rd day.
$\frac{1}{250}$ c.c.	250 ,,	Swelling.	- 20 ,,	7 days.	—
$\frac{1}{215}$ c.c.	215 ,,	None.	+ 10 ,,	7 ,,	—

* Official marks: "10 c.c. = 1000 I.E."

This sample of serum appears to contain 17·5 normal units per c.c. of serum instead of 100 units as claimed, and 175 normal units in the dose of 10 c.c. instead of 1000. There is thus in the dose the very serious deficiency of 825 normal units, the serum possessing a strength of only one-sixth that claimed for it.

TABLE No. XLIX.—*Sample No. 2.* Purchased April, 1896.*

Quantity of anti-toxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{1500}$ c.c.	265 grms.	Marked swelling.	- 35 grms.	—	2nd day.
$\frac{1}{750}$ c.c.	295 ,,	,,	- 40 ,,	—	4th ,,
$\frac{1}{500}$ c.c.	230 ,,	,,	None.	7 days.	—
$\frac{1}{215}$ c.c.	280 ,,	None.	+ 15 grms.	7 ,,	—

* Official marks: "10 c.c. = 1000, I.E."

This sample appears to be in every respect similar to No. 1.

TABLE No. L.—*Sample No 3.* Purchased May, 1896.*

Quantity of anti-toxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{300}$ c.c.	220 grms.	Swelling.	- 15 grms.	—	40 hours.
$\frac{1}{250}$ c.c.	265 ,,	Marked swelling.	- 20 ,,	7 days.	—
$\frac{1}{215}$ c.c.	220 ,,	None.	+ 5 ,,	7 ,,	—

* Official marks: "10 c.c. = 1000 I.E."

This sample seems to be precisely similar to Nos. 1 and 2.

TABLE No. LI.—*Sample No. 4.* Purchased June, 1896.*

Quantity of anti-toxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{250}$ c.c.	245 grms.	Marked swelling.	- 25 grms.	—	4th day.
$\frac{1}{500}$ c.c.	225 ,,	Induration.	None.	7 days.	—
$\frac{1}{215}$ c.c.	215 ,,	None.	+ 10 grms.	7 days.	—

Official marks: "10 c.c. = 1000 I.E."

This sample has precisely the same strength as those already given.

TABLE No. LII.—*Sample No. 5.* Purchased July, 1896.*

Quantity of anti-toxin injected.	Weight of guinea-pig.	Local reaction. in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{500}$ c.c.	200 grms.	Marked swelling.	- 25 grms.	—	40 hours.
$\frac{1}{300}$ c.c.	225 ,,	,,	- 15 ,,	7 days.	—
$\frac{1}{250}$ c.c.	305 ,,	,,	- 15 ,,	7 ,,	—
$\frac{1}{200}$ c.c.	270 ,,	None.	- 10 ,,	7 ,,	—

* Official marks: "5 c.cm. = 1000 I.E."

This sample of serum appears to contain 30 units instead of 200 units per c.c., and accordingly 150 units instead of 1000 units in the dose of 5 c.c. It is certainly almost twice as strong as the previous samples, as claimed by the makers, but there is still a similar deficiency between the number of units claimed and those which are actually present in the dose. In the following table are given our estimations of the strengths of the samples of serum collected during the last six months.

TABLE NO. LIII.—*Estimated Strengths of Samples of Serum, 1896 (E. Merck, Darmstadt).*

Sample number.	Normal units estimated per c.c.	Contents of bottle.	Units estimated in contents.	Units claimed by makers in contents.
1.	17·5	10 c.c.	175	1000
2.	17·5	10 c.c.	175	1000
3.	17·5	10 c.c.	175	1000
4.	17·5	10 c.c.	175	1000
5.	30·0	5 c.c.	150	1000

The discrepancy between the estimated strength and those claimed by the makers is very marked and serious, since a dose of only one-fifth the strength intended would be injected by the physician making use of this antitoxin. The apparent uniformity in the strengths of the samples would almost suggest some error in the method of testing carried out by the manufacturers. It should be noticed also that this serum is not manufactured under Government control, as is the case with the other two serums of German manufacture we have examined and reported on.

INSTITUT PASTEUR, PARIS.

SERVICE DU SÉRUM ANTIDIPHTHÉRIQUE, 18, RUE DUTOT, PARIS.

The serum of this Institute is apparently all of one strength as only one form of antitoxin is sent out. It is stated that "the preventive power of this serum is at least 50,000 times—i.e., it suffices to inject a guinea-pig with a quantity of serum equal to $\frac{1}{50000}$ part of its weight in order that it can receive without ill effects a dose of virulent culture or of toxin sufficient to kill the control guinea-pigs in less than thirty hours. This activity corresponds to a serum containing 100—200 immunising units of Ehrlich." At one time a piece of camphor was added to the serum for the purpose of preservation, but this does not now appear to be considered necessary. "The serum being obtained in a perfectly pure condition it is unnecessary to add any antiseptic to ensure its preservation. The bottles are tested by being placed in the incubator." As it contains no antiseptic it is claimed that it can be injected in very large doses without risk to the patient. It is recommended, however, that before injecting the serum the physician should assure himself that the fluid still remains clear. It is stated that at the beginning of the disease a dose of 5—10 c.c. is sufficient but that in more severe cases 15, 20, or even 30 c.c. should be injected.

The results of our testings of the samples collected during the last twelve months are set forth in the following tables:—

TABLE NO. LIV.—*Sample No. 1. Purchased August, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{10}$ c.c.	280 grms.	Distinct swelling.	– 10 grms.	7 days.	—
$\frac{1}{10}$ c.c.	280 ,,	Swelling.	None.	7 ,,	—
$\frac{1}{10}$ c.c.	300 ,,	None.	– 5 grms.	7 ,,	—

This serum contains 45 units per c.c. and 450 units in the dose of 10 c.c.; it is accordingly considerably stronger than is claimed for it by the Institute.

TABLE NO. LV.—*Sample No. 2. Purchased December, 1895.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{10}$ c.c.	280 grms.	Marked swelling.	– 25 grms.	—	40 hours.
$\frac{1}{10}$ c.c.	260 ,,	,,	– 35 ,,	—	48 ,,
$\frac{1}{10}$ c.c.	255 ,,	Swelling.	None.	7 days.	—
$\frac{1}{10}$ c.c.	250 ,,	None.	+ 5 grms.	7 ,,	—

This sample contains 20 units per c.c., or 200 units in the bottle as is claimed.

TABLE NO. LVI.—*Sample No. 3. Purchased March, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{10}$ c.c.	295 grms.	Marked swelling.	– 30 grms.	—	4th day.
$\frac{1}{10}$ c.c.	290 ,,	,,	– 5 ,,		48 hours.
$\frac{1}{10}$ c.c.	250 ,,	Swelling.	– 5 ,,	7 days.	—
$\frac{1}{10}$ c.c.	275 ,,	None.	+ 5 ,,	7 ,,	—

This sample contains 25 units per c.c. and 250 in the dose of 10 c.c., and is thus over the strength claimed.

TABLE NO. LVII.—*Sample No. 4. Purchased May, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration in weight in 48 hours.	Living.	Died.
$\frac{1}{10}$ c.c.	265 grms.	Marked swelling.	– 45 grms.	—	40 hours.
$\frac{1}{10}$ c.c.	300 ,,	,,	– 35 ,,	—	48 ,,
$\frac{1}{10}$ c.c.	225 ,,	,,	– 5 ,,	7 days.	—
$\frac{1}{10}$ c.c.	295 ,,	None (?)	– 10 ,,	7 ,,	—

This sample contains 20 units per c.c., or 200 units in the bottle, the amount claimed by the Institute.

TABLE NO. LVIII.—*Sample No. 5. Purchased July, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{10}$ c.c.	300 grms.	Distinct swelling.	– 20 grms.	7 days.	—
$\frac{1}{10}$ c.c.	290 ,,	,,	None.	7 ,,	—
$\frac{1}{10}$ c.c.	300 ,,	None.	– 20 grms.	7 ,,	—
$\frac{1}{10}$ c.c.	295 ,,	,,	+ 15 ,,	7 ,,	—

This sample contains 30 units per c.c. and 300 units in the dose, or considerably more than is claimed for it.

We give in collected form in the following table the results of our testing of the samples of serum purchased during the past twelve months.

TABLE NO. LIX.—*Estimated Strengths of Samples of Serums, 1895-1896 (Institut Pasteur, Paris).*

Sample number.	Normal units estimated per c.c.	Contents of bottle.	Units estimated in contents.	Units claimed by makers in contents.
1.	45	10 c.c.	450	100—200
2.	20	10 c.c.	200	,,
3.	25	10 c.c.	250	,,
4.	20	10 c.c.	200	,,
5.	30	10 c.c.	300	,,

The strength of serums exhibited in this table indicate that the antitoxic value was equal to the claims made by the makers, but that this strength is not such as is at present considered necessary for the most successful treatment of the more severe cases of the disease.

INSTITUT SÉROTHÉRAPIQUE,

PARC LÉOPOLD, BRUXELLES.

This serum is sent out in a pure form without the addition of any antiseptic. It is recommended that at least 2000 units (Behring) should be injected and that this should be repeated on the following day if necessary. Each bottle is said to contain 2000 units, the dose being 10 c.c. We give

in the following tables our estimations of the strength of three samples obtained since May last:—

TABLE No. LX.—*Sample No. 1.* Purchased May 11th, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{2500}$ c.c.	200 grms.	None.	+ 5 grms.	7 days.	—
$\frac{1}{2500}$ c.c.	300 ,,	,,	- 5 ,,	7 ,,	—
$\frac{1}{2000}$ c.c.	275 ,,	,,	+ 20 ,,	7 ,,	—
$\frac{1}{1000}$ c.c.	275 ,,	,,	- 20 ,,	7 ,,	—

* Official marks. "No. 2348, 2000 unites antitoxiques. Vérifié le 2/4/96. Prix 3 fr."

In this sample the number of antitoxin units estimated per c.c. is at least 250, whereas the makers claim only 200, and in the dose of 10 c.c. there are present 2500 units instead of 2000 units.

TABLE No. LXI.—*Sample No. 2.* Purchased May 11th, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{2250}$ c.c.	210 grms.	Distinct swelling.	- 20 grms.	—	40 hours.
$\frac{1}{2000}$ c.c.	310 ,,	,,	- 25 ,,	—	48 ,,
$\frac{1}{1750}$ c.c.	205 ,,	,,	- 5 ,,	7 days.	—
$\frac{1}{1500}$ c.c.	210 ,,	,,	None	7 ,,	—
$\frac{1}{1250}$ c.c.	205 ,,	None.	,,	7 ,,	—
$\frac{1}{1000}$ c.c.	210 ,,	,,	,,	7 ,,	—

* Official marks: "No. 2483. 2000 unites antitoxiques. Vérifié le 20/4/96. Prix 3 fr."

In this serum there appear to be 125 antitoxin units present per c.c. instead of 200 units claimed by the makers, so that we have 1250 units in the dose instead of 2000 units claimed by the makers.

TABLE No. LXII.—*Sample No. 3.* Purchased May 20th, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{2000}$ c.c.	255 grms	None.	- 20 grms.	7 days.	—
$\frac{1}{1000}$ c.c.	295 ,,	,,	+ 10 grms.	7 ,,	—

* Official marks: "No. 2511. 2000 unites antitoxiques. Vérifié le 25/4/96.

In this sample the serum contains 200 units per c.c., as claimed by the makers, and the bottle contains a dose of 2000 units.

We give in the following table, in collected form, our estimated strengths of this serum in the samples purchased, and the strength which is claimed by the makers:—

TABLE No. LXIII.—*Estimated Strengths of Samples of Serums, 1896 (Institut Sérothérapique, Brussels).*

Sample number.	Normal units estimated per c.c.	Contents of bottle.	Units estimated in contents.	Units claimed by makers in contents.
1.	250	10 c.c.	2500	2000
2.	125	10 c.c.	1250	2000
3.	200	10 c.c.	2000	2000

It will be seen from this table that the first sample is considerably stronger than is claimed, the second one falls to almost one-half the strength claimed, while in the third our estimation agrees with that of the makers.

WILLIAM VOGT,

LABORATOIRE DE BACTÉRIOLOGIE, CROIX D'OR, 5 BIS, GENÈVE.

The maker states that the strength of his serum is at least 50,000 times, and that this corresponds to from 100–200 units of Behring. Camphor appears to be added to the serum as a preservative, but the practitioner is advised to assure himself of the limpidity of the serum before using it for injection. It is recommended that 5–10 c.c. be injected for a mild and 10–20 c.c. for a more severe case.

Our estimations of the strengths of the samples of this serum purchased in 1896 are given in the following tables.

TABLE No. LXIV.—*Sample No. 1. Purchased May 11th, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{50}$ c.c.	255 grms.	Marked swelling.	— 25 grms.	—	2nd day.
$\frac{1}{80}$ c.c.	255 ,,	,,	— 15 ,,	7 days.	—
$\frac{1}{10}$ c.c.	200 ,,	Swelling (?)	— 15 ,,	7 ,,	—
$\frac{1}{20}$ c.c.	250 ,,	None.	- 5 ,,	7 ,,	—

This serum contains 25 normal units per c.c., which gives a dose of 250 units with the quantity present in the bottle, a strength which is somewhat above that claimed by the maker.

TABLE No. LXV.—*Sample No. 2. Purchased May 20th, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{50}$ c.c.	210 grms.	Swelling (?)	- 20 grms.	7 days.	—
$\frac{1}{10}$ c.c.	210 ,,	None.	None.	7 ,,	—
$\frac{1}{40}$ c.c.	270 ,,	,,	- 30 grms.	7 ,,	—
$\frac{1}{10}$ c.c.	295 ,,	,,	None.	7 ,,	—
$\frac{1}{20}$ c.c.	215 ,,	,,	,,	7 ,,	—
$\frac{1}{20}$ c.c.	300 ,,	,,	- 10 grms.	7 ,,	—

The serum in this sample contains 50 normal units per c.c., which gives a dose of 500 units in the bottle of 10 c.c., thus considerably exceeding the claims made for it.

TABLE No. LXVI.—*Sample No. 3. Purchased July, 1896.*

Quantity of antitoxin injected.	Weight of guinea-pig.	Local reaction. in 48 hours.	Alteration of weight in 48 hours.	Living.	Died.
$\frac{1}{10}$ c.c.	296 grms.	Distinct swelling.	- 10 grms.	7 days.	—
$\frac{1}{10}$ c.c.	240 ,,	None.	- 10 ,,	7 ,,	—
$\frac{1}{20}$ c.c.	265 ,,	,,	- 5 ,,	7 ,,	—

This serum contains 35 normal units per c.c. which gives a dose of 350 units in a bottle of 10 c.c. The strength is accordingly considerably over that claimed.

We give in the following table the results of our testing of these three samples in collected form.

TABLE No. LXVII.—*Estimated Strengths of Samples of Serum, 1896 (William Vogt, Geneva).*

Sample number.	Normal units estimated per c.c.	Contents of bottle.	Units estimated in contents.	Units claimed by makers in contents.
1.	25	10 c.c.	250	100–200
2.	50	10 c.c.	500	100–200
3.	35	10 c.c.	350	100–200

Although these samples are considerably stronger than the minimum that is claimed for them by the maker their

strength is not such as is considered necessary for the most successful treatment of the more severe cases of diphtheria.

In the introduction to this report we give a table (No. I.) indicating the quantity of the antitoxins (on the English market in August, 1895) which would require to be injected for a dose of 1500 normal units, which was the dose then recommended by Behring for a severe case of diphtheria. In the following table will be found the quantities of the serums on the market in July, 1896, that must be injected in order to introduce a dose of 3000 units—that now recommended by Behring for severe cases. In this connexion it may be mentioned that there is nothing sacred in these numbers, and that where considered necessary much larger doses—10,000 units—may be, and have been, used with the best possible results, since excess of antitoxin can apparently do no harm and may often exert a most beneficial influence.

TABLE No. LXVIII.

Source of serum.	Estimated number of units in bottle.	Quantity required for dose of 3000 units.
British Institute of Preventive Medicine (Sample No. 6)	700	42 c.c.
Burroughs, Wellcome, and Co. (Samples Nos. 10 and 11)	100	300 c.c.
Bacteriological Institute, Leicester (Sample No. 6) ...	400	150 c.c.
Behring, Hoechst, Germany (Sample No. 9)	600	12 c.c.
Schering, Berlin (Sample No. 7)	875	17 c.c.
E. Merck, Darmstadt (Sample No. 5)	150	100 c.c.
Pasteur Institute, France (Sample No. 5)	300	100 c.c.
Institut Sérothérapique, Parc Léopold, Bruxelles (Sample No. 3)	2000	15 c.c.
William Vogt, Geneva (Sample No. 3)	350	85 c.c.

We have now given the results in detail of our examination of the various diphtheria antitoxins that have been on the British market during the last twelve months. The relative strengths of these antitoxins has been shown and how far these agreed with the strength claimed by the makers, where any such statement is made, has been generally indicated, although it must be distinctly borne in mind that our standard is an arbitrary one and the results obtained accordingly may not be absolutely correct. The astounding variation in the quality of the serum supplied by different makers and the puzzling manner in which the antitoxin from certain sources varied from time to time will be evident to any one who will take the trouble to study the various tables. That the results obtained by the use of these serums in the treatment of diphtheria should have varied is what must be expected if the antitoxin does exert any influence at all on the course of the disease. It is under these circumstances, we think, intolerable that the medical man should be kept in ignorance of the strength of the serum which he is making use of, when the want of such knowledge may be, but too often, a matter of life or death to his patient. We have accordingly felt compelled to publish not merely the results of our analyses of the samples which have extended over the last twelve months but also to give in full detail the experimental data on which the conclusions are founded so that anyone conversant with such matters can from the facts supplied form his own judgment on the points at issue. The first question which should be definitely settled is that the makers of antitoxic serum should decide upon a common standard of testing the serum which would permit of the medical man recognising with absolute certainty the amount of antitoxin he is injecting into his patient, and that each sample should contain this information together with the date of issue and the quantity (number of c.c.) present in the bottle. The general recognition by bacteriologists of the accuracy of the results obtained and the increasing adoption of the standard by the manufacturers, leaves little doubt that the method of estimation of antitoxic value put forward by Ehrlich and Behring is the one which will finally be adopted, and every effort should be made to accelerate this result. As we have now reason to believe also that the German Government may be willing to supply normal test toxin which would give a fixed point in the estimation of the antitoxic value and thus render the method an absolute one and the results obtained exactly comparable, there can exist no doubt as to the desirability of adopting this method. There can be no question also that the practice in this country of issuing only one strength of antitoxin does not meet the requirements of the situation. It has come to be generally recognised that a much weaker serum suffices when a case is treated in an early stage of diphtheria than is necessary to obtain the best possible results in the later and more severe cases of the disease. In this respect, no doubt, great difference exists in the possibility of treatment between private and hospital practice. In hospital practice a larger quantity may usually be injected at once, and this injection can usually be conveniently repeated in the course of a few hours and in this way the necessary number of antitoxin units may be rapidly introduced into the patient. In private practice, on the other hand, the number of antitoxin units considered necessary for the treatment of the case should be introduced at once, and for this purpose the serum must be of such a strength that the quantity required may not be unduly large. In this country, where the makers send out only one strength, the stronger serum must be diluted by the addition of the weaker, so that all are brought to one common level. It is possible that this may, perhaps, account for the fact that the strengths of the serums produced in this country have not progressively increased as might legitimately have been expected. Thus, as the demand for antitoxin has increased and fresh horses have been brought under treatment, their weaker serum may have been added to the more potent serum obtained from those horses which had undergone more prolonged treatment. Our analyses certainly do not indicate that steady rise in the antitoxic value which might otherwise have been anticipated. Thus Behring, who had previously bound himself down not to send out serum containing less than 100 normal units per c.c., has this year announced that no serum containing less than 250 normal units will be circulated from the Hoechst laboratories, and from the fact that he now supplies also extra potent serums, it may be expected that this standard will in time be again raised. It is certainly advisable that some understanding should be come to among the English manufacturers of antitoxin that no serum should be sent out containing less than a fixed minimum of normal units per c.c. The lowest standard which could be considered as at all satisfactory would be one which fixed 60 units per c.c. as the minimum, and it would be still better were 100 decided upon. The first would give a dose of 600 normal units in an injection of 10 c.c., which is the minimum dose (600 units) recommended by Behring for even the early stages of the disease. At the same time, of course, stronger serums should be sent out, and these ought, in course of time, to replace the weaker antitoxins, which should eventually be withdrawn from the market.

We may now consider briefly the question of the cost of the various antitoxins manufactured at home and abroad. On investigating this question one is at once struck by the fact that a much lower price is charged for the British than for the foreign antitoxins, and it is impossible to avoid associating this with the quality of the serum supplied. It is, of course, obvious to any one considering the matter for a moment that the question of cost should not enter into consideration in connexion with the use of a remedy which can be relied upon, not merely to cut short the acute symptoms of a disease, but even to reduce the mortality to one-third that previously existing. Regarded even from the point of view of direct economy, the actual saving of expense resulting from the rapid subsidence of the acute symptoms of the disease which usually follows upon the administration of a sufficient dose of antitoxin, taken with the fact that the necessity for the operation of tracheotomy is in consequence so frequently obviated and that when this is performed the case requires so much less attention, would far more than cover any ordinary price which could possibly be charged for the remedy. On the other hand, in this country the price charged for a bottle of serum has been usually less than a bottle of medicine frequently costs, and there seems little doubt but that, with better prices, a much higher standard of quality could have been attained. We give below in the appended table the cost per bottle and the estimated price per 1000 normal units of the serums on the English market last August. It is hardly necessary to point out that the price per 1000 normal units does not really represent the actual value of a serum in

practice, since the large quantities of the weaker serums which would require to be injected absolutely preclude their use in severe cases. This is recognised fully by Behring, who charges much higher prices for the extra potent serums than for his ordinary serum containing the same number of units. The following table will, however, show the potential value of the serums in relation to their price:—

TABLE No. LXIX.

Source of serum.	Price per bottle.	Calculated price for 1000 units.
British Institute of Preventive Medicine (Sample No. 1)	1/6 for 30 c.c.	2/6
Burroughs, Wellcome, and Co. (Sample No. 2)	1/- for 30 c.c.	4/1
Bacteriological Institute, Leicester (Sample No. 1)	1/6 for 29 c.c.	15/-
Behring, Hoechst, Germany (Sample No. 1)	2/9 for 6 c.c.	4/7
Schering, Berlin (Sample No. 2)	4/6 for 10 c.c.	4/6
Pasteur Institute, France (Sample No. 1)	3/- for 10 c.c.	6/6

In the next table, No. LXX., are given the price per bottle and the calculated price for 3000 normal units of the various antitoxins which were purchased in July, 1896. It is, of course, obvious that only the more powerful serums could be actually used for the introduction of such large quantities of antitoxin; reference to this and other tables will readily indicate those most suitable:—

TABLE No. LXX.

Source of serum.	Price per bottle.	Calculated price for 3000 units.
British Institute of Preventive Medicine (Sample No. 6)	1/- for 10 c.c.	4/2
Burroughs, Wellcome, and Co. (Samples Nos. 10 and 11)	1/- for 10 c.c.	30/-
Bacteriological Institute, Leicester (Sample No. 6)	3/- for 20 c.c.	22/6
Behring, Hoechst, Germany (Sample No. 9)	2/9 for 2·4 c.c.	13/9
Schering, Berlin (Sample No. 7)	4/6 for 5 c.c.	15/3
E. Merck, Darmstadt (Sample No. 5)	4/- for 5 c.c.	80/-
Pasteur Institute, France (Sample No. 5)	3/- for 10 c.c.	30/-
Institut Sérothérapique, Parc Léopold, Bruxelles (Sample No. 3)	3/- for 10 c.c.	4/6
William Vogt, Geneva (Sample No. 3)	7/6 for 10 c.c.	63/9

As we have already insisted, the price per 3000 units does not really indicate the actual values of the serums as the strength per c.c. must be such as to permit of this number of normal units being injected in a moderate quantity. As will be seen on reference to Table No. LXVIII., the antitoxins supplied by Behring, Schering, and the Institut Sérothérapique, Bruxelles, are the only ones which could be *conveniently* used for this purpose, as the dose for 3000 units does not in any of these exceed 17 c.c. of serum. The prices charged by the makers for this dose vary very considerably, but we may expect that they will in time be reduced to a more common standard.

CONCLUSIONS.

We are of opinion—

1. That a common standard of estimating the strength of antitoxic serum should be agreed upon by the English manufacturers.

2. That no serum should ever be sent out containing less than 60 normal antitoxin units per c.c.

3. That antitoxic serum of higher strengths must also be provided to meet the requirements of treatment in more severe cases of diphtheria.

4. That every sample of antitoxic serum sold should be plainly marked with the antitoxic strength of the serum (number of normal antitoxin units per c.c.), the quantity of serum present in the bottle, and the date of issue.

SUGAR FORMATION IN THE LIVER.

IN a communication made to the Physiological Society at its recent meeting at Oxford Dr. Pavy related some experiments with regard to the post-mortem glycogenic action that occurs in the liver. It is well established that a considerable formation of sugar takes place in the liver after death. This is due to a hydration of glycogen into sugar, a phenomenon that is brought about by ferment action, and, according to Dr. Pavy's views, is the converse of what takes place during life, when the vital activity of the liver protoplasm produces a dehydration of carbohydrate matter by transforming sugar into glycogen. The view is, however, held by some physiologists that the transformation of glycogen into sugar which occurs in the liver after death is yet an act of vitality due to the continuance for a time of molecular life. The conversion of glycogen into sugar, however, is, Dr. Pavy said, readily effected by chemical and by ferment action, and *a priori* it appears superfluous to invoke vital action to account for such a conversion in the liver after death. Moreover, Dr. Pavy has advanced arguments to show that the production of sugar could not go on in the liver during life, as it does after death, without the production of diabetes. When the liver substance is treated with alcohol the ferment which it contains is precipitated but retains its properties, and when dried may be kept for an indefinite time. In the experiment which Dr. Pavy described, the liver of an animal recently killed (the animals used were rabbits and cats) was well pounded with spirit, which removed the sugar present at the time; the product was dried without the use of heat and reduced to a powder which it was found could be kept for use as required. When this powder was treated with water and kept in an incubator for two or three hours an active production of sugar took place. As a control experiment a similar quantity of the powder was plunged into boiling water which would destroy the ferment, and this specimen did not on incubation give evidence of the production of sugar. It is impossible to conceive, said Dr. Pavy, that a dry powder obtained by treating liver substance with alcohol, a powder which may be kept unaltered in a stoppered bottle for months, can retain vitality. In comparing the amount of sugar produced in fresh liver when incubated and that produced in the dried alcoholic precipitate allowance has to be made for the difference between the dried and the moist state, and when this is done the results are concordant. Ordinarily in an alcohol-coagulated liver fairly rich in glycogen the sugar produced (reckoned as glucose) amounts on incubation for two or three hours to 35 to 45 per 1000. In one recently experimented with it amounted to 53 per 1000. These experiments, Dr. Pavy asserted, support the contention that the production of sugar in the liver after death is due to a ferment action and not to the vital activity of the liver protoplasm. Briefly stated, his conclusions are as follows:—The amount of sugar in a liver taken without any special precautions to ensure rapidity of manipulation is considerable; that which is present in a liver removed with rapidity immediately after death, and at once plunged in a freezing mixture and thus reduced to a temperature which would suspend both vital and ferment actions, is small. The saccharine condition of the liver taken after death by ordinary methods is thus seen to be due to a post-mortem change. The fact that in liver substance treated with alcohol, dried and powdered, a considerable production of sugar can take place under suitable conditions of moisture and temperature is a proof that the change is due not to a vital but to ferment action, a conclusion which considerations drawn from the nature of the chemical change rendered probable *a priori*.

DEVONSHIRE HOSPITAL AND BUXTON BATH CHARITY.—The half-yearly statement of the Devonshire Hospital and Buxton Bath Charity, presented at a meeting held at the hospital on July 4th, showed that during the six months ended June 30th there had been 1265 in-patients and 84 out-patients received. Of these 954 were discharged "improved," and 44 as "no better"; there were two deaths and at the end of the half year there were 251 patients remaining. Among the 1265 in-patients there were 613 cases of chronic and subacute rheumatism, 250 of these being complicated with heart disease; 313 other patients suffered from arthritis deformans and 49 from gout.

THE LANCET.

LONDON: SATURDAY, JULY 18, 1896.

IT is hardly necessary to draw attention to the highly important report of THE LANCET Special Commission on the Relative Strengths of Diphtheria Antitoxic Serums, which will be found in another part of our present issue. The justification for such an inquiry is stated in the opening paragraphs, which lay stress on the admitted fact that the results obtained in this country from the antitoxin treatment of diphtheria have been less striking than those gained upon the Continent, whilst a too frequent failure of the novel remedy to avert the progress of the disease has in some quarters engendered a distrust of its efficacy and a doubt as to the correctness of the interpretation placed on the results of BEHRING'S researches. Doubtless many things have contributed towards this impression; but that which has been mainly operative is the simple fact of insufficient dosage, and if a study of the careful and exhaustive report furnished by our Commissioners does nothing else than bring this fact home to the minds of the profession their labours will not have been in vain. For the principle underlying the use of antitoxic serum is so firmly established on scientific grounds that it seems almost impossible for failure to arise; and it would be worse than folly to dismiss without further inquiry a remedy which has been accredited by tests far more crucial than are commonly available because in the hands of some it has yielded only disappointment. When we recall the nature of diphtheria and its deadly influence upon the body, and when we find good ground for the belief that in BEHRING'S serum we possess the means of neutralising this potent virus, we are bound to employ that remedy, and if it fail we are equally bound to know the reason why. The timely administration of an antidote may rescue a man from the certain death that would follow if the dose of poison he has taken were allowed to remain in his system without interference; but if the amount of the antidote be insufficient to neutralise the poison death may occur in spite of the administration of the remedy. The parallel with diphtheria is almost exact. In that disease we have produced by the agency of the bacillus a virus or toxin which, if left unneutralised, might produce the direst effects. The fact, so strikingly exemplified in the experiments related by our Commissioners, that the longer the delay in having resort to antitoxin the larger the dose required to neutralise the poison, is one which harmonises well with our conception of the nature of the disease and the theory of antitoxin. It gives, further, a satisfactory reason why one sample of serum may produce marked benefit when employed in one case within a few hours of the diphtherial infection, whilst it may be almost without effect in another case where its administration has been delayed. Now since, as is clearly proved, the potency of the various kinds of serum procured in this country is comparatively small, and since, too, it is remembered that resort to its use has often been restricted to the severe cases and as a last resource, there can be no surprise at many of the results being negative. The fact is the profession in this country have hardly had the facility for giving the antitoxin treatment a fair trial; and those who have been most urgent for authoritative conclusions to be arrived at should be reminded that the time has not yet come for a really just judgment. Hitherto the administration has been more or less haphazard, and the quantity of serum injected has been thought to represent its antitoxic value; but a glance at the data given by our Commissioners will prove to demonstration that there is no relation between the two, and further that the quality of the serum is most variable. It is interesting to find that the practical conclusion arrived at by Dr. ENGEL in his monographs noticed in our Review columns is precisely that which forms the burden of our Commissioners' report. For he urges that there should be the least possible delay in making the injections, and that the antitoxic potency of the serum should be as high as can be procured.

In view of these considerations it is most essential that provision should be made for having the samples of serum in the market tested periodically and standardised. There should be some uniform method of testing employed, and that of EHRLICH and BEHRING seems to be the most reliable; and it should be done by an independent central authority. The German Government, which in all these matters is so far ahead of that of any other country, has already established such a central authority. Then, too, it may be advisable to limit the sources of supply. We do not advocate a monopoly even in antitoxin, but having regard to the nature of this remedy, to the liability of an organic fluid to become contaminated, and the importance of each sample of serum being up to a standard minimum of antitoxic potency (our Commissioners suggest that this should be not less than 60 normal units per c.c.), it is obvious that the more limited the sources of supply the less the liability to defects. Especially would we urge the rejection of any samples that show evidence of contamination. Everything goes to show that the "antitoxin" itself is free from any effect on the body, no matter in what amount it is administered. Its beneficent action is to protect from the virulence of the toxin; but the serum that contains it may harbour less benign elements, and it is quite conceivable that many of the "Nebenwirkungen"—i.e., accidental rather than essential qualities—of the serum are due to adulteration and not to remedial principle.

THE holiday season is now upon us, and many of those who dwell in large towns or crowded centres are looking forward to a change of air and scenery. To some families, however, the midsummer outing has assumed the tyrannical force of a well-established dogma. Not to go out of town at this season would be to lose *caste* among the neighbours, and it is very commonly believed would expose the children to the certainty of ill-health during the forthcoming winter. Nevertheless, business may have been bad, the family income less than usual, and only a feeble balance in hand remains to pay for the summer outing. Some near, cheap, and nasty place is selected which is reached after a most uncomfortable journey in an overcrowded third-class railway carriage.

Comparatively inexpensive lodgings have been secured. The professional lodging-house keeper has let every inch of space available and has packed her own family in the basement, in the kitchens, where they all sleep together amid the food of the lodgers. The drains are probably not in order, for the local authorities of small and cheap seaside resorts are often too poor and too ignorant to carry out sanitary works and the sanitary inspection of all private dwellings in a strict, constant, and effective manner. In such unwholesome surroundings the food is easily contaminated, to say nothing of the direct contact with the dirty fingers of the lodging-house keeper's children, who make a point of picking the fruit out of the lodgers' pies. The parents, in obedience to the conventional laws of their class, have left their comfortable home; they have brought their numerous children, from the baby in arms to the eldest restless and mischievous boy, to an overcrowded seaside lodging-house. Here they can scarcely expect the rest and peace of mind they should enjoy; their meals are unsatisfactorily cooked; their expenses are exorbitantly high, and the mother if a good housewife will be in a state of chronic indignation because she knows full well that she is not obtaining her money's worth. Happy the day, for the parents at least, when the family reaches home again to resume its usual orderly, economical, and yet satisfactory mode of living. As the enormous majority even of middle-class families have but very limited incomes, this unfavourable picture of the summer outing unfortunately applies to a very large proportion of the midsummer holiday crowd. Would it not be better, happier, and more healthy if in such cases a less ambitious holiday were attempted? Those who have a healthy and satisfactory house in town might content themselves with daily excursions to surrounding country districts. A holiday which means hurry, overcrowding in railway carriages and lodgings, continual stint, and harassing anxiety as to the expenses incurred is likely to do more harm than good. Yet this is precisely the way in which holidays are taken by countless thousands of families. With some it is a superstition that they must go out of town or else all manner of dreadful evils will happen; whilst others have not the moral courage to confess to their friends and neighbours that, for once, they can not afford to go away. Thus the annual effort is made, and what should be a rest from all worry, a pleasurable, wholesome, and welcome change, becomes a matter of drudgery and anxiety, combined with overcrowding, over-exertion, badly cooked meals, and general discomfort.

We would strongly urge upon every well-intentioned *paterfamilias* the virtue of discretion. Let him first of all face his financial position fairly and frankly. Let him not be deceived by his inclinations. The likely expenses must be overestimated and nothing attempted which he cannot easily afford. The holiday must not be marred by the remorse which extravagance engenders. Above all things it must be a holiday for the mind as well as for the body, and there is no rest for the mind where money worries prevail. Then there are families to whom travelling is as a second nature. They can catch a train without hurry or flurry. To them several hours in a railway carriage means rest rather than fatigue. By reading, conversation, or the contemplation of the passing scenery they can so occupy—and pleasurably occupy—their minds that they feel no sense of weariness, and a journey really does them good. Others, on the contrary, look upon a railway journey as if it was some dangerous and desperate adventure they were about to face. Such persons may be seen hurrying on the platform in a desperate state of flurry long before the train starts. Encumbered by all manner of unnecessary bundles, they are in such a condition of fatigue and heat even before starting that there is every prospect of their catching cold when the rapid motion of the train occasions strong draughts in the carriage. Such persons should be chary of travelling, and in any case should strive to tutor themselves into a calmer and more reasonable state of mind.

These remarks, of course, apply with much greater force to invalids. If a healthy tourist can injure himself by injudicious travelling, how much greater is the harm done to a person of delicate health. The change of air and of scene may be very necessary to the patient, but we must very carefully consider whether the beneficial results will fully compensate for the fatigue and anxieties of the journey. The holiday, moreover, must be in strict harmony with a person's means, physical and financial. It must also be in accord with taste. He must go where he will find amusement, diversion, or that form of rest which is enjoyable. In this tastes differ so widely that no general rule can be established, and some people are inexpressibly bored where others are enjoying themselves to the utmost. No advice can be safely given without a full knowledge of the tastes and habits of the person who seeks advice. We believe that holidays are an absolute physical and mental necessity. We believe that the best of all forms of holiday is that procured by travelling, or at least by change of town and domicile. But this rule is not universal in its application; it is subject, on the contrary, to almost as many modifications as human nature is varied in its idiosyncrasies.

THE fatal collision which occurred at Preston on Monday morning to the Scotch express has led, as usual, to rather exaggerated statements as to the dangers caused by the high speed of modern express trains. This view is often too hastily adopted. In the present case it is impossible, until the official inquiry has elicited the facts, to speak confidently about the pace of the train at the time of the collision. It may be presumed, however, that speed would have been slackened before passing the important station of Preston, and that the rate was not higher at the time than that attained daily at some part of its course by every express on any of the trunk lines. It is often assumed that the fast expresses or "racers," as it is the fashion to call them, travel throughout at a much greater pace than the ordinary express trains. The fact is that most of the time is gained by eliminating stops and by maintaining a higher pace on ascending gradients by a lavish consumption of coal. On the falling gradients very high rates of speed—sixty to seventy miles an hour—are daily reached by many trains, at any rate on the four trunk lines north of the Thames, and yet how rare are mishaps, even compared with those of twenty years ago. A comparison with the Board of Trade

returns for past years will show that together with steady increase of speed and more numerous trains the safety of the average passenger has become far greater. For this we have to thank the various companies who have rapidly adopted inventions for the protection of the public and their own servants. We have now almost perfect signalling arrangements costing enormous sums; locomotives and rolling stock strong enough to emerge almost unscathed from not a few collisions; a permanent way of steel, the efficiency of which is maintained by an army of platelayers; and not least, the railways are manned by a body of engine-drivers, signalmen, and guards, who are unsurpassed for efficiency, sobriety, and civility. With such safeguards as these the train service of this country is carried on, not only at a higher speed, but with greater comfort and safety than in bygone years or than in other countries.

There is another alarmist view which requires consideration. That is, that the high speed maintained unnerves the drivers and brings on various maladies, besides rendering them unfit for the responsibility of driving an express; and it is often hinted that this has been the cause of particular accidents. But this view is not supported by facts. The very appearance of the grimy engineer himself belies it. We applied to Sir HENRY OAKLEY, general manager of the Great Northern Railway (on which probably a higher average rate of speed is maintained than on any other railway), and asked for information as to the present state of health of the men who were driving express trains ten years ago. He courteously furnished the information, and it appears that of sixty-one men who were driving express trains regularly in 1886 forty-three are still driving. Of the rest only five have died, all from acute diseases—hernia, pneumonia, &c., one being killed by accident; the others have retired. We doubt if better prospects are enjoyed by sixty-one men of the same age engaged in any other responsible occupation. Nor can any confirmation be obtained of the view that habitual travellers suffer from vibration caused by high speed, their immunity being, no doubt, partly due to the comfortable fittings of even the third-class carriages—certain southern railways always excepted. It seems, therefore, that there is no occasion to prohibit the present rates of speed, but merely to insist that rolling stock, permanent way, signalling arrangements, and continuous brakes be kept up to their present high standard of efficiency. The rapidity and comfort of our express trains are of the greatest convenience to the nation, and we may be thankful that the risk of an individual journey is almost infinitesimal.

THE spread of cholera up the valley of the Nile is, as we have already said, a very significant and lamentable occurrence. It may obviously have a most important bearing on the future of the campaign in the Soudan, for the epidemic seems to be moving up the Nile Valley, and it is extremely likely to attack the Khalifa's army, in which case the consequences will probably be more serious to the Dervish forces than to ourselves. The latest accounts are happily much more hopeful, for they show a decrease of the disease in the Anglo-Egyptian force, and consequently point to a decline of cholera in that particular direction. The total number of deaths in Egypt since the outbreak has been between 9000 and 10,000. In addition to the fatal cases that have been returned among the Egyptian troops there have been numerous attacks among the British force. On the 11th 13 fresh cases and 6 deaths were returned in the Egyptian army at Wady Halfa and 2 deaths in the same army to the south of Wady Halfa. According to a report from the General Officer commanding in Egypt to the War Office authorities, which was published in the papers of the 14th inst., the deaths of 1 British officer and 5 privates had been returned between July 2nd and 11th from cholera and enteritis. The officer was Major RODERICK OWEN, D.S.O., of the Lancashire Fusiliers, a well-known and highly popular man, as well as a distinguished soldier.

A report from the Sirdar on the 12th inst. shows that cholera on the frontier had altogether given rise to 705 admissions and 479 deaths up to that date. No fresh cases had occurred at Kosheh or Akasheh for two days and subsequent reports are also satisfactory, no new cases having occurred along the line. From the cholera returns issued at Cairo on the 14th inst. we learn that there were 354 cases and 334 deaths registered in Egypt on the 13th, including 101 deaths at Fayoum, as against a total of 310 cases and 273 deaths on the preceding day. At Wady Halfa there were 52 new cases and the same number of deaths among civilians, while among the Egyptian troops 1 death occurred at Assouan, 6 at Wady Halfa, and 1 death south of Halfa. A death from cholera at Gemai in the North Staffordshire Regiment is also reported.

It is quite possible that while the cholera among the troops in the Nile Valley must be regarded as forming part of the epidemic, the outbreaks of that disease in the stations occupied by the troops may prove to be of the nature of localised manifestations of relatively brief duration in consequence of the cholera-cause being unable to acquire any firm root or foothold under the excellent sanitary precautions and safeguards that have been taken by the medical and military authorities. All accounts agree in stating that nothing has been left undone as regards the water-supply, drainage, surface-cleanliness, and scavengering of the occupied camps, and the strict medical inspection of individuals and food supplies that has been followed. Accommodation has, moreover, been provided for the prompt isolation of all suspicious cases; and recourse can always be had to movement out of any infected site into a fresh one when deemed necessary or desirable. These are the measures upon which reliance has always been placed, and their wisdom has been pretty well ratified by the results of previous experience. Cholera is essentially a filth-engendered disease, and does not attain the dimensions of a big epidemic when the sanitary conditions of a locality are in good order. With the native population and the Dervish forces, however, the condition of affairs is far otherwise. Their poverty and ignorance as well as their neglect of hygienic precautions and contempt of sanitary legislation are well known. Once cholera is introduced among them the general conditions afford ample opportunities for the spread and development of that, or of any other, epidemic disease. Cholera had existed for some time in Lower Egypt

before it appeared in the Nile Valley and the Soudan, and it will be noticed that its spread has been contrary to the course of the river Nile, which is now rapidly rising. Most of the medical officers with the Anglo-Egyptian expedition have already had considerable experience of the disease and possess a practical as well as a theoretical acquaintance with it. They have been most energetic in the application of their knowledge and we may confidently predict that nothing will be neglected to limit the spread of cholera in the expeditionary force. The Government of Egypt and this country have been very unfortunate in regard to this outbreak among the troops. We have, of course, nothing to say about the political aspect of this Soudan expedition, but it seems clear that the people are heartily tired of the Khalifa's rule, and of its oppressive tyranny, and of the ruin in which it has involved the country.

The Egyptian army of to-day is a very different force to what it was formerly, and the campaign has so far been admirably conducted. The advent of cholera in the force under any circumstances must be reckoned as a serious obstacle and it forms at present *the* important item of intelligence from the Soudan. We can only conclude by reiterating the advice which we have so frequently proffered, viz., that serious attention must be given to the sanitary improvement of Egypt. We must no longer neglect our obvious duty in this respect or be content with the existing state of the public health of that country with its high rates of mortality and its liability to periodical recurrences of cholera.

Annotations.

"Ne quid nimis."

THE PRESIDENCY OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

SINCE the election of Sir Spencer Wells fourteen years ago to the presidency of the Royal College of Surgeons of England, St. Thomas's Hospital, one of the largest hospitals of the metropolis and the second in seniority of foundation, has not been able to claim the honour for one of its surgeons. The turn of St. Thomas's has now, however, come again, as Sir William MacCormac has been elected to the coveted chair. Sir William MacCormac has won honours in many fields, but he can scarcely have gained any one more pleasing to himself than that conferred upon him by the Fellows of the College on Thursday last, and we have pleasure in offering him our sincere congratulations.

THE DEATH CERTIFICATES OF MIDWIVES.

AT an inquest recently held at Derby by the borough coroner, Mr. John Close, some startling facts were brought to light concerning the granting of death certificates by midwives and their acceptance by the registrar. The case under investigation was that of a child who died about thirty hours after birth. The midwife who attended at the confinement advised the father of the child to call in a medical man, as, in her opinion, the child was not likely to live. The father deposed that he sought the services of a medical man, but the latter declined to attend unless his fee was paid beforehand, and in this he acted not only legally but reasonably. Upon this refusal by the medical man the father seems not to have troubled himself further in the matter, although, as the coroner pointed out, he ought to have gone to the parish medical officer, who was paid for such services as the case required. Upon the death of the child the midwife sent a note written for her by another person to say that she had attended the confinement and that no medical man was present. No cause of death was assigned and consequently the midwife could not be charged with certifying, but she admitted that in several other cases she had certified and had given as the cause of death "suffocation," "failure of the heart," and "exhaustion." It transpired also that these certificates had been registered and burial certificates granted by the registrar. Pursuing his inquiry beyond the immediate limits of the case under investigation, the coroner called evidence to show that another midwife had acted in the same way. The registrar contended that he was acting strictly upon his instructions from the Registrar-General, and the coroner allowed that he had done so, but commented strongly on such latitude being given to registrars, and contended that it opened the way to the commission of crime. As he said, if it were so desired nothing could be easier than for a murder to be committed and the act safeguarded against discovery by the practice sanctioned by the Registrar-General's instructions. He went further and stated his opinion that it was illegal for a midwife to give a certificate assigning the cause of death and for the registrar to register such certificate and grant a burial order thereon. We fully subscribe to every sentence of the coroner's summing up and gladly acknowledge that he has rendered valuable service to the public by the nature and thoroughness of his procedure. It is perfectly monstrous that a midwife should be permitted to certify to the cause of death and that such certificates should be accepted and registered. At the above-mentioned inquest a midwife who had been in the habit of certifying said that in one case she gave suffocation as the cause of death, although, as she admitted, she could not distinguish between suffocation and death from poisoning. Surely the examples here quoted are enough to prevent their repetition. If the Registrar-General has acted strictly within the provision of the law—and we do not contend that he has not—the sooner the law is altered the better. Such practices as have prevailed at Derby are probably only an index of a much more general usage. The security of human life cannot be obtained whilst such laxity is permitted by the Legislature.

DROUGHT.

FOR the second time in consecutive seasons we are brought to face the inconveniences, not to say the probably serious results, of a drought. Few would believe that the present season is worse off in regard to water-supply than last year. Yet it is so, and the total deficiency of rainfall for this year is now 4·69 inches, or more than 50 per cent. on the previous thirty years' average. Consumers in the districts supplied by the East London Waterworks Company, for example, have been presented with the following notice, dated July 13th: "Owing to the existing drought (*which is much more severe even than that of 1895*), and to there being every appearance of its continuance the directors have deemed it advisable as a precautionary measure to shut off the supply during the night. In each district the water will be turned off and on as nearly as possible at the same hours daily. The turncocks will commence shutting off at 9 P.M. and turning on at 6 A.M. Consumers are requested to see that their taps and fittings are not allowed to waste water, as by so doing the period during which the intermittent supply has to be resorted to may be much shortened." The italics are ours. In this statement we have the company's admission of a shortness of supply. Of course it must be conceded

that the present is an exceptional season, but the water-supply of London should be adequate enough under all conditions, and if it be shown that even under exceptional conditions the supply is likely to run short it is a strong argument for going further afield. We trust that the serious complaint of deficiency of supply in the East End of London, to which illness and even fatal results were attributed and which was the subject of enquiry last season, will not have occasion to be reiterated this year. But it is evident that the East London Company's resources, at any rate, are at the present time strained to their utmost. There is little doubt, moreover, that the same predisposing condition, the continuous absence of rainfall, must also be keenly felt by the companies which depend upon the river Thames for their supply.

THE METHODS OF DEMOCRACY.

WE have frequently contended that freedom can be carried too far. Freedom in this country, for instance, consists in everyone being allowed to annoy his neighbour provided only that he acts under the guise of "commerce"—e.g., newsboys and organ-grinders—or "conscience"—e.g., anti-vaccinationists and Peculiar People. In democratic America they stand no nonsense, and the means employed there to convert sinners from the error of their ways are simple and effectual. The following are portions of a letter printed in a Gloucestershire journal and written by a man in Texas to his mother, who lives near Stroud:—"I have been much interested in the accounts of the small-pox in your neighbourhood. In this free and enlightened country, when it broke out in a town everyone was ordered to be vaccinated. Those who objected were held against a wall by one policeman, and another stood opposite with a loaded revolver while the operation was being performed. I should much like to assist in the same way at the vaccination of some of the Stroud people." So should we.

THE INFLUENCE OF SUBSOIL-WATER ON HEALTH.

WE print elsewhere in our columns the greater portion of an interesting paper read recently by Dr. Monckton Copeman at the Sanitary Institute on the important subject of subsoil-water in its relation to health and disease. There are few matters upon which an accurate knowledge is more desirable than this, as, if we can discover what are the exact bearings of subsoil-water upon health and obtain reliable records of the movements of this "underground lake" in all parts of the country, we shall be in a position to do much in the matter of the prevention and reduction of disease. Although our knowledge on this subject has within comparatively recent years been much augmented, it must be admitted that there are several questions connected with it upon which we are still in the dark and as to which different observers have arrived at different conclusions. Possibly, as Dr. Copeman indicated in his paper, these differences may in some degree be due to a tendency to attach undue importance to subsoil-water as an exclusive agent in the production of disease, whereas its influences must be considered in conjunction with questions of soil moisture and organic pollution, of rainfall, temperature, barometric pressure, and other meteorological conditions; in fact, as has been insisted upon by Pettenkofer, the level of the subsoil-water may be taken as an easily observable index of conditions of soil moisture, &c., likely to be associated with it. Fortunately for the furtherance of accurate study in connexion with this subject the science of bacteriology is able to afford in these days very material assistance, and the work which has already been done as to the behaviour of certain pathogenic micro-organisms in contact with soils of varying degrees of temperature and humidity has added much to our knowledge and paved the way for further observations. In the discussion of this question there is, too, need for differentiating between diseases such as cholera and typhoid fever, which in some instances may be spread by means of specifically infected matter washed into drinking-water wells by the movements of subsoil-water, and diseases such as phthisis, rheumatism, and diphtheria, which are probably influenced by subsoil-water movements in quite a different manner. Although workers in this country have furnished several valuable records as to the movements of subsoil-water there is much need for further observations; and, as we have before pointed out in our columns in connexion with the valuable work of Mr. Adams, the medical officer of health of Maidstone, to which Dr. Copeman drew attention, it would be well if the example set at Maidstone were followed by other medical officers of health in this country. There is such a thing as patriotism in scientific research, though perhaps it is of a different type to that engendered by martial ardour. We are fully aware that records such as we suggest place a tax of no light nature upon a busy medical officer of health or general practitioner, but, as Dr. Copeman observed, the employment of a self-registering apparatus should not be a difficult matter, and this would reduce the labour to a minimum. It would be well, too, if in connexion with these observations records of the temperature of the earth, &c., were also kept.

THE PUBLIC MORTUARY AT PORTSMOUTH.

AT an inquest held at Portsmouth on Thursday Mr. G. F. Morley called the attention of the coroner to the state of the public mortuary of the town. It was, he said, insufficiently covered in and screened from view, for no one could make a necropsy there without being interrupted by women and children! On one occasion he said he placed a body on the lid of a shell with a sheet over it. The sheet was blown off by the wind and the corpse exposed to public view. There were, he also said, no towels or proper utensils, and in the case which had been inquired into that day he had had no notice to make a post-mortem examination until two days after death. The body was then a putrid mass, and it was "simply disgusting to go into the place," and the only excuse was that the officer "had not time" to make out the case before. The coroner said this was not the first time he had had such complaints. He bore evidence that the police were actually very busy with four inquests on the intervening day in this case, but this can be no excuse for a state of affairs which—if as stated—is a disgrace to the borough of Portsmouth.

"AN ETON PLAYING FIELD."

THE present "phenomenal" weather, as various newspapers will insist upon calling it, sets most of us thinking of the delights of the country; and when we saw the book whose title we have quoted above the Strand seemed more stuffy than ever. Again we saw the cool river and the big elm trees, "Athens," and Boveney Weir. But the Eton playing field in question is very far removed from these delights and is situate in the wilds of Hackney Wick, where the Eton Mission are doing a good work. Among other things they teach the young men how to row and swim, but the means of doing so are rather limited as the following quotation shows: "The Hackney Cut is a canal joining two portions of the River Lea. It is a highway for barges containing all kinds of merchandise, but more especially rags, ashes, and every sort of garbage, so that the odours thereabouts were

[1] An Eton Playing Field. London: Edwin Arnold.

strong but varied. Several factories in the immediate neighbourhood covered the surface with an oily scum; the water was more often the colour of beer, while dead animals of all sorts and sizes floated about according to the wind until they disappeared." True this refers to 1883, but we fancy matters are not much better now. "The state of the Lea" is generally a fruitful source of correspondence in the press about this time and the present drought makes it all the more necessary that some means should be taken to check pollution.

THE ROYAL COMMISSION ON THE SPREAD OF TUBERCULOSIS FROM ANIMALS.

AN important Royal Commission has just been appointed. Its object is to enquire into the administrative procedures available for controlling danger to man through the use as food of the meat or milk of tuberculous animals. The commission will further consider what should be the proper action of the responsible authorities in condemning for the purposes of food supplies animal carcasses or meat exhibiting any stage of tuberculosis. The commissioners are as follows:—Sir Herbert Maxwell, Dr. Thorne Thorne, C.B., Mr. G. T. Brown, C.B., Mr. H. E. Claver, Mr. Shirley F. Murphy, Mr. John Speir, and Mr. T. C. Trench. Dr. T. M. Legge will act as secretary to the commission, the work of which from a sanitary point of view should be of the highest possible value to the community.

APHASIA IN POLYGLOTS.

IN a recent number of the *Revue de Médecine* Dr. Pitres details a number of interesting observations with reference to the peculiarities of aphasia as it occurs among patients who were able to speak fluently more than one language. It appears that such patients do not become aphasic in the same degree for all the languages which they speak. At first, as a rule, there is general aphasia, then, as improvement occurs, the patient is able to understand and then to speak that language which he has known longest and with which he was most familiar. The capacity for use of the other less familiar languages was acquired later. Such a conclusion does not of course imply the existence of different centres for the different languages, but is merely an illustration of the fact that qualities and capabilities which are acquired latest are most easily lost or impaired by any condition which interferes with the nervous structures which underlie them.

THE MEDICAL DIGEST.

FOR many years the great value of Dr. Neale's Medical Digest has been known to medical men engaged in literary work. There are, however, many men in active general practice who fail to avail themselves of its invaluable aid in their daily rounds. It is difficult, knowing what the work is, to understand the reason for this. Once the infinite amount of information upon each and every branch of medical science that can be gleaned by a glance is realised, no one would willingly be without the book at his right hand, so as to be able to consult it constantly. We can recommend it as a useful present, and our knowledge of its great value is the reason why we wish to bring it more under the notice of medical men, for it is indeed worthy of its name, "The Busy Practitioner's Vade-Mecum." Few works have ever been so unanimously and eulogistically reviewed, and that without a dissentient voice. The Digest published in 1890 represented all that was known in medicine and its allied branches during the previous fifty years, and last year an appendix, bringing the work up to 1895, was issued at a cost of 10*s.* 6*d.*, the complete book being obtainable for 18*s.* 6*d.* Some, we know, fail to understand its value, but this is for want of a few moments' study, and our advice is to all practitioners—send for the book, and they will thank us for the advice. It is most astonishing how Dr. Neale, in the midst of a busy general practice, could have possibly compiled a book involving such an enormous amount of literary work, but we believe it has only been done by the devotion of nearly four hours a day of incessant labour to it for fifty years. The profession have much reason to be grateful to Dr. Neale for his unselfish work, but in the natural course of things he cannot carry it on for many years longer, and we trust that some provision will be made by which such a valuable work may be continued.

TRANSIENT AMBLYOPIA DURING LACTATION.

IN the last number of the *Neurologisches Centralblatt* appears a short abstract of a paper in the *Beiträge zur Augenheilkunde* by Dr. Karl Heinzel. He describes four cases of transient blindness occurring during lactation and traceable to interference with the functions of the nervous system. Such a condition, according to Dr. Heinzel, is apt to occur in otherwise healthy women. The first symptoms may manifest themselves before the birth of the child or during the early period of suckling, and consist of interference with the function of the eyes which may proceed to complete blindness. With the ophthalmoscope may be found evidences of more or less inflammation of the nerve. The duration of the symptoms extends over months and usually leads to a partial degree of optic atrophy with perhaps only a just perceptible interference with visual acuteness, and never to permanent blindness. The inference that lactation is in some way connected with the symptoms in these cases was arrived at by a process of exclusion.

PROTANDRIC HERMAPHRODITISM.

HERMAPHRODITISM of any form is rarely met with among vertebrates, but in a few of the lower members of this large division of animals one variety of hermaphroditism occurs. In the hag-fish (Myxine glutinosa) are found both an ovary and a testis, situated on the right side, those on the left side not being developed; yet though this fish possesses the generative organs belonging to both sexes they are not functionally active at the same time, but the testis first develops fully, while the ovary is still immature, and then later in life the testis atrophies and the development of the ovary proceeds to completion; thus the young act as males and the old ones as females. This form of hermaphroditism is known as protandric or androgynic. Dissected specimens of three myxines, showing the generative organs in the various stages of development, have recently been added to the Museum of the Royal College of Surgeons of England. Protogynic hermaphroditism, in which the female organs develop first, is almost unknown in animals, but is by no means rare in the vegetable kingdom; it is met with, for instance, in Euphorbia cyparissias.

INFANTICIDE BY MEASLES IN ENGLAND AND SCOTLAND.

THE mortality from measles has proportions that call for more attention from sanitary authorities than it receives. There is this most significant difference between this mortality in different classes of the community: in the better sort of practice the mortality from measles is almost *nil*. Some practitioners with well-to-do patients have possibly never seen a fatal case of measles in their practice, though the disease is often highly pyrexial. But the number of deaths from it now in the large towns of England and Wales and of Scotland exceeds greatly the number from scarlet fever or diphtheria, or from both of these put together. This mortality has been described lately by writers in the *Nineteenth Century* as a form of murder. It is sufficiently

illustrated in our issue of last week. Our monthly analysis of London sickness and mortality gives a mortality in June from scarlet fever of 67 and from diphtheria of 173, and from both of 240, whereas the mortality from measles was 412. In thirty-three of the largest English towns during the week ending July 4th, of 720 deaths due to the principal zymotic diseases 175 were from measles and 100 from scarlet fever (36) and diphtheria (64) combined. The case of Scotland is not much better. Of 548 deaths in eight Scotch towns 109 were caused by the principal zymotic diseases; of these, 38 were referred to measles. Glasgow—whose physicians, notably Dr. Gairdner and Dr. Russell, have directed attention to this infanticidal disease—has a bad pre-eminence in this respect and measles is responsible for 33 of the 38 deaths. Such havoc of infant life cannot be much longer continued without scandal and discredit to sanitary authorities. The remedy is not so easy as in the case of the other two diseases, as the infectiousness is greater and has time to act before quite declaring itself. Nevertheless, ways must be found for improving the hygienic environment of the little patients and for anticipating the diagnosis under suspicious circumstances.

DR. RENTOUL'S MIDWIVES BILL.

YET another Bill on the midwives question—and that from Dr. Rentoul and others. It is distinguished from other Bills of the sort by its length and by the number of details. As the session is practically over it is not necessary to analyse the contents. It is entitled "An Act for the Protection of Pregnant and Lying-in Women and Newly Born Children by providing for the Better Training of persons as Obstetric Nurses, their Supervision, and Compulsory Registration as such." In its general conception it does not differ materially from other Bills of the sort. But it has two peculiarities. It practically ignores the word midwife and substitutes that of obstetric nurse, and it defines her as "a person who acts, or is entitled to act, as an obstetric nurse in all cases of labour under the direct supervision of a registered medical practitioner," &c. In this clause Dr. Rentoul separates himself from the Lancashire and Cheshire Branch of the British Medical Association and all practical persons, and requires the actual presence on every poor lying-in woman of a certified trained nurse and a registered medical man. He makes no provision for the payment of the medical man, and if the obstetric nurse attends save under the medical practitioner's direct supervision, however ordinary the case, she will not only have no claim to her fee, but she will render herself liable to censure or erasure. We are of opinion that this is impracticable. The interest of the Draft Bill is in the evidence it supplies that Dr. Rentoul recognises that lying-in women and newly-born children require "protection."

ABSCESS OF BRAIN WITH VISUAL APHASIA.

IN the *Neurologisches Centralblatt* appears an abstract of a paper in the *Prager Medicinische Wochenschrift* by Professor Zaufal and remarks on the case by Professor Pick. The patient was a woman aged twenty-five years who became ill two weeks before she was seen at the hospital with headache, pain in the left ear, and sickness. Eight days later—i.e., a week before admission—there was a discharge of pus from the left ear. When she came to hospital there was a certain degree of stupor, the pupils were unequal, and there was severe headache. In the left ear there was evidence of an acute suppurative affection of the middle ear. Next day there was more stupor, the pulse was slowed, and there was vomiting. The right pupil was larger than the left and there was weakness of the right side of the face. In the further progress of the case the psychical condition remained about the same, but visual aphasia showed itself. The patient was not able to name objects shown to her, although she knew them well and could describe their appearance. There was also a slight degree of weakness in the limbs on the right side, and optic neuritis. Professor Pick made the diagnosis of abscess in the left temporal lobe in the position of the second and third temporal convolution rather far back and in the white substance. An operation was carried out and an abscess as big as a hen's egg was discovered in the part indicated. Professor Pick, in his observations on the case, dwells particularly upon the localising value of the visual aphasia. The fact that there was no hemianopsia pointed to the absence of any affection of the occipital lobe or angular gyrus, whilst the absence of sensory aphasia indicated the escape of the first temporal and the upper part of the second temporal convolutions. The patient made a complete recovery, a result on which both physician and surgeon are to be congratulated.

THE INTERNATIONAL CONGRESS OF DERMATOLOGY.

THE Third International Congress of Dermatology will be held, from Aug. 4th to 8th inclusive, at the Examination Hall on the Victoria Embankment. A special feature of the congress will be a series of clinical demonstrations of rare skin affections, which it is hoped will be of special interest. There will also be demonstrations illustrative of the bacteriology of skin diseases. All information as to committees may be obtained respectively from Dr. James Galloway, 21, Queen Anne-street, W.; secretary of the Museum and Demonstration Committee; Mr. H. G. Plimmer, Wunderbau, Sydenham, S.E., Bacteriological Committee; and Mr. George Pernet, 77, Upper Gloucester-place, N.W., Reception Committee; while general information can be obtained from Dr. J. J. Pringle, 23, Lower Seymour-street, Portman-square, W.

INTERNATIONALISING SCIENCE.

AN important movement was inaugurated on Tuesday last by a dinner at the Hôtel Métropole when the Royal Society entertained the foreign delegates who have come over to this country to attend the conference now sitting in London to consider the question of forming a catalogue of scientific literature on principles which shall be universally intelligible and universally approved. It must be admitted that this country has made rapid advances during the last decade in facilitating the work of scientific reference, and we might especially mention the endeavours in this direction of the publication committee of the Chemical Society, in whose monthly journal will be found abstract records of most of the work going on in the world in chemical research. The movement greatly needs extending into other fields of scientific investigation. The cataloguing of general scientific work as it stands at present leaves much to be desired, and we trust that the deliberations of the conference sitting this week will be attended with gratifying results. The work should have also a not unhealthy influence on general international affairs. Men of science recognise, as Professor Mach from Germany said, no distinction of race or nationality, and they were glad, he added, to coöperate with Englishmen in a work in which all men of science were interested, especially as the work was done under the auspices of the Royal Society. The Belgian minister, referring to the same great principle of science knowing nothing of nationality, said that the President was a great master of antiseptic surgery, and if he could only introduce the principles by which he was so distinguished into the realm of politics and international relations he would be one of the greatest benefactors of the human race. We shal

watch the outcome of the labours of the conference with peculiar interest.

THE ROYAL MEDICAL BENEVOLENT COLLEGE.

WE have received the report of this institution for the year ending May, 1896. The council are glad to be able to give a favourable account of the condition of the institution and of the work carried on; there has been an increase in the amount of annual subscriptions owing in large measure to the special appeal made at the end of 1894. As regards pensioners there are in all fifty-eight and fifty Foundation scholars. A fresh water-supply has been obtained, and the new laundry is working satisfactorily. As no washing will in future be sent out from the College the risk of importing disease by this method is done away with. The financial position is satisfactory, there being a balance of £561 odd, and altogether we can warmly congratulate the council upon the position of their institution.

METHYLENE BLUE IN CHYLURIA WITH FILARIA NOCTURNA IN THE BLOOD.

IN the *New York Medical Journal* of June 15th, 1895, Dr. Austin Flint and Dr. Joseph W. Henry stated that methylene blue given in two-grain doses every two hours was very beneficial in parasitic chyluria; but Dr. F. P. Henry describes very fully in the Philadelphia *Medical and Surgical Reporter* of June 20th, 1896, a case of that disease in which he administered two-grain capsules of methylene blue every three hours—sixteen grains per diem—from March 12th to 21st, and ten grains per day in divided doses of two grains from March 21st to 29th. The case has been already mentioned in our columns.[1] The patient had been recently confined; her urine and fæces were stained deep blue and her milk was at last slightly stained; the infant's fæces and urine also had a bluish tinge. The methylene blue was absolutely without effect on the vitality of the filariæ. Before taking the methylene blue the patient had two grains of thymol every three hours for a time, during the whole of which the filariæ were abundant in the blood.

A SENSELESS, DEGRADING, AND DANGEROUS EXHIBITION.

EVERYONE has heard of the marvellous feats of endurance said to have been performed in France by a man named Durand, and an opportunity is now offered to those who are proud of showing that they possess a degenerated mind of witnessing a repetition of one of the feats at the Royal Aquarium. This man having undertaken to be suspended by the neck for six days, the senseless exhibition was opened to—judging from the laughing and tittering—a delighted audience on Monday last, July 13th. If we are not much mistaken the man is not hung by his neck at all, but suspended from another part of the body; and if this is so, the public who go to see the "show" are being deceived, though deservedly. Who compose the "medical committee" supposed to be watching the man? We cannot think that any of our own profession have so degraded themselves as to have had anything whatever to do with the matter. With regard to the statement that there is a scientific side to the feat, the late Dr. Charcot having "successfully cured ataxia in his patients by hanging them," even granting for the sake of argument that the method employed at the Aquarium is identical with that employed at the Salpêtrière, the fact that Durand is presumably not suffering from ataxia or from any disease in which nerve-stretching is advantageous, gives the lie to the statement. Apart, however, from its senselessness the exhibition can only foster those degrading and morbid tastes which it is the duty of an enlightened and civilised people to eradicate from its midst. In many minds there is an almost irresistible impulse to imitate any abnormal occurrence which is impressed upon the senses, and the exhibition is more than likely to have this effect upon the morbid brain of a spectator. If for this reason alone such exhibitions should be forbidden by law; but all intelligent and right-thinking persons could soon put a stop to these performances if they would abstain from encouraging by their presence such disgusting and stupid "entertainments."

[1] THE LANCET, April 25th, 1896, p. 1193.

THE PATHOLOGY AND TREATMENT OF FLAT-FOOT.

THE *New York Medical Journal* of June 20th contains an interesting study by Dr. Robert W. Lovett of Boston on the Mechanics and Treatment of the Broken-down Foot, that is to say of the too-pronated foot. The movement of pronation as Dr. Lovett explains, consists essentially of rotation at the hip, the toes, comparatively fixed, acting as a fulcrum, the weight of the body falling not on the outer side of the foot but more internally. This movement of eversion is always accompanied by abduction of the forepart of the foot, the reason alleged being that the mediotarsal joint between the astragalus and os calcis on the one side and the scaphoid and cuboid on the other, has not its plane at right angles to the long axis of the foot, but slants outward and backward. This joint is largely concerned in pronation and accounts for its obliquity. The ankle-joint has practically no share in this movement. In the treatment of the broken-down and flat foot a strong boot of suitable type is of course essential. Dr. Lovett insists upon the following points in its structure: (1) the front should be strongly adducted; (2) the part opposite the metatarso-phalangeal joint wide enough to allow for expansion of the sole under pressure; (3) the upper leather stiff enough to support the arch; and (4) the inner border of the sole as straight as possible to allow freedom to the great toe in supporting the inner side of the foot. The paper is well illustrated by a series of ingenious composite photographs which certainly appear to justify the author's conclusions.

A COUNTY COURT JUDGE'S ESTIMATION OF THE VALUE OF PROFESSIONAL SERVICES.

LAST week Dr. Jones of Chorley sued the Lancashire and Yorkshire Railway Company in the county court for £15 for medical fees for attending a patient at Adlington, who had been injured in a collision. The attendance was from Jan. 20th to Feb. 7th, including seventeen visits and several bottles of medicine. The distance was close on three miles, and the plaintiff alleged that each visit cost him two hours time. The defendant company thought £7 ample remuneration. For the defence it was argued that this sum was sufficient, for by a code of rules prepared by the Manchester Medico-Ethical Society the fee to be charged for each visit was 3*s.* 6*d*, and counsel contended that in the case of a sempstress out of work low fees ought to have been charged by the medical man. The judge (Judge Coventry) in giving judgment, said the case involved a principle that was not used in any other case. "It was a recognised thing in the medical profession that the rich people paid for the poor people. A medical man in attending a rich person or one in well-to-do circumstances probably charged ten times as much for a similar case than he would in attending a poor man; the rich man could pay what the poor man could not pay." In this case he thought the charge was too much, and he gave a verdict for the plaintiff for ten guineas. It will be news for many of the rank and file of general practitioners to know that "the rich people pay for the

poor people," and we should be pleased if it were so, but a good many practitioners in this country get no rich people to attend. There is, no doubt, a sliding-scale of fees with a minimum recommended years ago by the Manchester Medico-Ethical Society and based on the rental, but it must be always remembered that the fees are mostly in accordance with the services rendered. Then, again, mileage must be added. The County-court judge's view of professional charges is certainly one that is not borne out in actual practice.

WE learn that there is an extensive prevalence of typhoid fever at Chichester, which is serious in view of the coming Goodwood race-meeting. Two inspectors of the Local Government Board went to Chichester on Wednesday, but the cause has not yet been discovered.

THE council of Bedford College for Women, London, have appointed Mr. Thomas Morison Legge, M.A., M.D., B.Ch. Oxon., D.P.H. Cantab., to the Professorship of Hygiene.

DR. VAUGHAN HARLEY has been appointed by the Council of the University College of London to the new Professorship of Pathological Chemistry which they have established.

WE have received the annual report of the medical officer of the Local Government Board (Dr. Thorne Thorne) for the years 1894–1895, and shall give it early notice.

THE LIFE-SAVING EXHIBITION.

APART from the fact that this exhibition is being held under the auspices of the St. John Ambulance Association and of the Life-saving Society partly in aid of the re-endowment of Guy's Hospital, the bringing together in one building of manufactures, appliances, and inventions for the saving of life is an idea which should be warmly supported. The management, however, have not succeeded in attracting as large and varied a selection of exhibitors as we should have liked to have seen, nor can we congratulate them upon the arrangements made upon the opening day. The success of an exhibition of this kind depends greatly upon first impressions, and these were not calculated to fascinate the visitor when the exhibition was opened to the public on Thursday, July 9th. Many of the stalls were in an unfinished state and the building smelt strongly of ammonia in consequence of its having been previously used as a horse repository. Since the opening day, however, things have improved, and we trust that all interested—as all should be in life-saving appliances—will have paid a visit to the Central Hall, Holborn, before the exhibition closes to-day (Saturday).

The lamentable accident which happened quite recently to the *Drummond Castle* will naturally awaken increased interest in inventions for the saving of life at sea, and there are several exhibits in this class which deserve more than passing attention.

Messrs. Cornish and Co. of 54, New Bond-street have an interesting collection of mattresses, deck seats, and other articles of ship furniture which also serve the purpose of rafts and buoys in case of wreck, fire, or other disaster at sea. This idea of so constructing articles for general use on board ship that they will float on being thrown into the water and thus serve as a means of saving the lives of shipwrecked persons is a good one, and as applied by Messrs. Cornish and Co. should be more extensively used than it is.

With the same object in view Mr. T. H. Douthat, St. Stephen's-villas, Hounslow, shows some mattresses, beds, cushions, &c., stuffed with granulated cork.

The pneumatic pontoon-raft, intended to be carried on board ship and for use at life-saving stations, is exhibited by Mr. J. J. Mather, Ashbank House, Godley, Hyde. The inventor claims that a raft 15 × 12 feet × 6 feet will carry seventy passengers under cover, and has provided for the raft screws worked either by gas, oil, or electricity; after this supply has been exhausted he has made provision for a lug-sail. The raft carries provision boxes on both outside pontoons, which can be used as seats in fine weather and railed round to protect passengers from the sea. The bows are detachable and of hollow structure, thereby answering as a cushion to fend off any foreign substance that may be encountered.

Mr. A. H. Thompson of 18, Garford-street, Poplar, E., shows some ingeniously constructed lamps which he has appropriately named "the Equipoise." Practically they are ordinary lamps suspended from a delicate universal joint similar to that used for ships' compasses, and in whatever position the holder is placed the lamp retains the upright position. A very simple automatic extinguisher is attached, and if the lamp be accidentally upset the flame is immediately extinguished. The principle without the extinguisher is applied to bull's-eye lanterns, cycle lamps, &c., so that in case of an upset the lamp is not extinguished and no oil escapes. As adapted for searching into dark corners &c., this ingenious idea should prove extremely useful in warehouses and places where inflammable goods are stored.

The "Hydro" Lamp exhibited by the Hygienic Heating and Lighting Company, of 13, Southwark-street, is another invention designed for the prevention of fire from the upsetting of lamps. Water is first poured into the container, which is of special construction, followed by the oil. If the lamp be overturned the water flows out, and covering the wick, promptly extinguishes the light. The following advantages are claimed. Directly the lamp is upset water rushes to the burner and oil to the bottom of the lamp; there is no space in the oil chamber where explosive gas can accumulate, water being round the burner; the oil is always kept cool; the greatest body of oil is always furthest from the burner; the oil is always up to its work, near the burner (excepting when upset)—this ensures a good light to the last drop of oil; blowing down the chimney will not make the lamp explode; there is no communication between the wick tube and the oil chamber excepting through perforations; nothing but metal is used in its construction; there are no mechanical parts to get out of order; and any kind of burner can be used.

The exhibit of the Cape Asbestos Company, 8, Minories, and 3, Carlisle-avenue, E.C., is a very interesting one. Various kinds of cords, ropes, cloths, millboard, &c., are shown made from this incombustible material, as well as the Blue Cape Asbestos Bedding, which is claimed to be fire-, insect-, germ-, and rot-proof. We have not had an opportunity of testing it in all these aspects, but from a cursory examination it would seem to possess many of the qualities claimed for it.

Among the many interesting exhibits are an ingenious Ladder for Saving Life on the Ice (Joseph Ball, 5, Stanley-street, Grimsby), the Bucket Fire-extinguisher (Messer and Thorpe, 8, Quality-court, Chancery-lane), Life-saving Scaffolding (the Life-saving Scaffolding Company, 21, Finsbury-pavement), Swain's Improved Patent Platform for Window Cleaning, and Wippling's Patent Sash Fittings for the same purpose.

The Jeyes Sanitary Compound Company is well represented, the Red Cross Germicide Company have a good show of their perfumed disinfectants, the British Electrozone Corporation have a stand displaying their powerful disinfectant made from sea water by electricity, and Messrs. Newton Chambers show their Izal disinfectant preparations.

The Liebig Company shows various forms of their extracts, including the Peptone of Beef; and Messrs. Maw, Son and Thompson have a fine display of surgical instruments and nursing appliances, as have also Messrs. Allen and Hanbury, Limited.

THE PORTSMOUTH WATER-SUPPLY.—The Portsmouth authorities are troubled at an intimation from the Local Government Board that in the event of the latter sanctioning a loan for the purchase of the waterworks, now owned by a company, by the corporation the principal and interest would have to be repaid in sixty years. About a million of money is required, and it was hoped it could be spread over seventy or eighty years—rather unreasonably, it would appear, when the oft-expressed denial of the Local Government Board of terms over sixty years in length is considered. Repayment in sixty years would, however, mean a deficit the first year of nearly £3000 and an annual loss for a year or two after.

THOMAS WAKLEY,

THE FOUNDER OF "THE LANCET."

A BIOGRAPHY.[1]

CHAPTER XXVIII.

A Bird's-eye View of Imperial Politics.—National Poverty and Hunger.—The Reform Bill and the Rise of Chartism.—The Poor-law Amendment Act and its Influence on the Repeal of the Corn Laws.—The Irish Question in 1835.—Wakley's Attitude towards the Three Agitations.—The Spirit of the Times.

IT is not within the scope of this biography to enter at length into constitutional history, save where constitutional history and the history of medical reform are identical, but a few words on the political state of the country at the time of Wakley's election to Parliament, on the aims of political leaders and the general feeling of the people, are necessary to the complete understanding of his career. These words will form only the briefest summary of their subjects and may be open to the reproach that it is impertinent to the readers' intelligence to recall such elementary historical facts. That, however, is a risk which must be run with the good object of telling a clear story.

At the close of the war with Napoleon as marked by the Battle of Waterloo, Great Britain was weighed down by taxation enforced to meet the colossal expenses which she had incurred in behalf of the peace of Europe. In that very year—the year, by-the-bye, when Wakley came to London—the land-owners, from which class both temporal estates of Parliament were drawn, passed an Act having for its object the aggrandisement of their own pecuniary position. The high price of corn, which was one of the direct consequences of the war, pleased their pockets. With a perfectly honest as well as traditional belief that the benefits derived from the soil of the country should be confined by State interference to the possessors of that soil, there being no just necessity that the other fifteen-sixteenths of the population should take aught from the land which did not belong to them, the landlords of Great Britain secured the passage of a measure prohibiting the introduction into the land of foreign corn until wheat had reached the astounding price of eighty shillings a quarter. Speaking sweepingly, but not at random, this meant that the poor were kept permanently hungry. Hence when other circumstances—wars and rumours of wars, bad harvests, fiscal blunders, and blunders in colonial policy—combined to make the whole nation feel the stress of living beyond their income, the poor became particularly hungry. The result of these exacerbations of their misery was such explosions as culminated in the Peterloo "massacre" or the Cato-street "conspiracy," to take two examples of widespread and serious disaffection. This background of poverty, of real and abiding misery, must not be overlooked, for all the political events of the reigns of George IV. and William IV. take their tint to some extent from it.

Wakley arrived in Parliament at the time of the great bloodless revolution, at the time which the most powerful and popular Conservative leader of the century denominated the collapse of Dukism. The iniquitous corn-tax remained, although its oppressiveness had been recognised and attempts made to relieve it by a little botching and tinkering with sliding scales. But the franchise had been liberally lowered by the Reform Bill, and with the representation of the people more fairly distributed towns like Manchester, Leeds, and Birmingham, having immense esteem for the commercial position of the country and no particular respect for the peer or the land-owner, had a voice in the government. Surely, thought the poor, something will be done for us now. Yet within a year it became only too clear that this great measure had not satisfied the people. They might have seen that the repeal of the Corn Laws would almost certainly follow, but they did not desire to wait, and they wanted other things, the hungry stomach not generally accompanying either the far-seeing eye or the patient spirit. In truth, the great Reform Bill at the moment of becoming law pleased few people. It was a curtailment of the privileges of the land-owners that they could not be expected to welcome in their hearts, even though a land-owning legislature had approved it, and Lord Grey was looked upon by many of his order—the politicians of the Carlton, Brookes's and Boodles's—as little better than a traitor. On the other hand, the measure was not sweeping enough to benefit the working-man directly. In the form in which it finally received the sanction of the Crown it admitted the middle and lower middle classes to the suffrage, but so far from conferring the same upon the working man it actually deprived certain tillers of the soil, already enjoying a vote under the peculiar circumstances of some of the ancient boroughs, of their time-honoured and illogical privileges. Out of this natural and widespread discontent arose the movement known as Chartism, a movement which aimed at the following radical changes in the Constitution:—(1) universal suffrage; (2) annual Parliaments; (3) payment of members; (4) abolition of property qualification for parliamentary candidates; and (5) vote by ballot. To three of these innovations Wakley was already, to a certain extent, pledged by his answers to his constituents when he entered the House, while Chartism did not exist as an entity with a formulated programme, a policy, and an accepted appellative until two years later. With regard to payment of members Wakley never expressed any definite opinion; he disapproved of anything that was likely to interfere with the independence of a member's vote, but he strongly objected also to poverty forming an invincible barrier between an able man and parliamentary service. He was, as a matter of fact, content that members should not be paid under an invariable rule, seeing that in those exceptional cases where a large number of his fellow-citizens desired a man to represent them in Parliament they generally combined to secure their candidate against grave pecuniary loss. Wakley firmly believed in the ballot and supported its introduction into parliamentary elections at all times and with unbounded enthusiasm. His constituents at Finsbury did not make this a test question when bargaining with him for their suffrages; he voluntarily added it to his programme.

Chartism formed only one of the three great agitations which were imminent in 1835, and the attendant storms of which convulsed the unrestful times in which Wakley's political career was run. The other two were the agitation for the establishment of Free Trade, and that for the Repeal of the Act of Union in Ireland; but it was the permanent misery of the people and their bitter disappointment at the result of the Reform Bill which made all three movements so notorious for the spirit of open rebellion with which they were conducted. Dissatisfaction was not, it must be remembered, confined to the agricultural labourer. Many manufacturing firms were discharging large numbers of their hands, improvements in machinery assisting them in their economy, while stagnation in the markets prevented them from quickly disposing of their goods and justified them in a course of retrenchment. So that the distress in the rural districts owing to the price of corn and the pitiful wages

[1] Chapters I., II., III., IV., V., VI., VII., VIII., IX., X., XI., XII., XIII., XIV., XV., XVI., XVII., XVIII., XIX., XX., XXI., XXII., XXIII., XXIV., XXV., XXVI., and XXVII. were published in THE LANCET, Jan. 4th, 11th, 18th, and 25th, Feb. 1st, 8th, 15th, 22nd, and 29th, March 7th, 14th, 21st, and 28th, April 4th, 11th, 18th, and 25th, May 2nd, 16th, 23rd, 30th, June 6th, 13th, 20th, 27th, July 4th, and July 11th respectively.

current became shared in the manufacturing districts, and the factory hand "out at play," as he euphemistically termed both going on strike and being without a job, was a much nastier and more dangerous person to deal with than his bucolic fellow sufferer.

A union between the ill-treated agricultural labourer and his better educated and worse mannered companion in misery, the factory hand, was brought about undesignedly by the new Poor-law Amendment Act. Previously to the passing of this Act in 1834 the management of the pauper was vested entirely in the hands of the local vestry, each parish looking after the poor in its own district. The result of this arrangement was that in-door relief was hopelessly mismanaged, scattered rural districts being unable to support the poor in an adequate workhouse. Out-door relief, on the other hand, was more spontaneous and better directed, the recipients of assistance being personally known to the distributor of the charity, very generally the squire or the rector. But it was to be urged against this that able-bodied men out of work got relief without doing anything in return for it, and in 1832 it was thought necessary to appoint a Royal Commission to look into the matter and advise a remedy. The outcome of this Commission was the Act of 1834, which was framed with philanthropic intent, but which was too much directed towards relieving the owners of land and houses of the burden of their responsibility to be fair or satisfactory to the community. Before the passage of the Act of 1834 it was possible for a pauper to become entitled to relief simply by being hired or employed in a parish, or by renting a tenement therein, or by apprenticeship, as well as by birth. The amended law laid down that birth should be the *only* means of obtaining settlement for purposes of relief, unless other means were agreed to by the guardians under the Act in any particular case. This rule bore exceedingly hardly upon the labouring classes. In certain districts where the landlords were selfish or recklessly cruel the cottages on their estates were destroyed in order that the territorial magnates might become exempt from the maintenance of the population. Such was the extreme value of the land that was under tillage that in many places the owners could afford to allow large tracts to go out of cultivation, and they preferred to do this rather than make themselves responsible for the relief of the peasants who should have been resident on the soil and employed in its cultivation. We can imagine the plight of these poor labourers. Their claim to relief from starvation was only to be made good by journeying back from the place to which starvation had already driven them, to a place where there was no roof to shelter them, no work to sustain them, and where the rulers of the district would consider their reappearance an intolerable intrusion. Wherever they went all who availed themselves of their labour were solicitous that they should not become dwellers on the soil, and consequently the filthiest corners in the cities became their necessary refuge. Here they foregathered with their companions in misfortune, the superseded manufacturing hands, as well as with the frankly vagrant and criminal classes, and out of this ill-omened amalgamation was formed a body of desperate men who were at once the objects of the fear and the hate of the legislative classes of all creeds. The selfish and the ignorant saw in these unfortunate people only impudent rebels trying to emulate in their occasional outbursts of riot and incendiarism the excesses of the followers of Robespierre. The kindly-hearted and the well-informed saw in them the main obstacle to the practical treatment of all the great questions in philanthropy and economics, inasmuch as every movement for the popular good was certain to receive their baneful support and so to be at once unfairly discredited by its involuntary association with them. The Chartists failed to secure any of their objects at the time of demanding them only because of the unbridled violence of the rabble hanging on to the fringe of the movement. And the repeal of the Corn Laws, which proved an immediate relief of the pitiful condition of things that has been briefly sketched above, would not have been secured without even fiercer fighting had it not been that the leaders were determined and patient men, men strong to resist the forcing of their hands by turbulent supporters.

The Irish Question in 1835 was almost at its acutest stage. The Catholic Emancipation Act of 1829 had been granted grudgingly—many thought in fear—and the value of the concession had been ruined because of the widespread feeling that justice had only been done under compulsion. At the same time the mental descendants of Lord George Gordon found the Catholic Emancipation Act unpardonable and dangerous, and dangerous certainly it was in that it made of the Repeal demonstrations that are associated with O'Connell's name a hopeful effort. The Irish peasant knew that O'Connell had demanded Catholic Emancipation, and that having been refused at first, so far from being abashed, had said that he would compel the English to grant the concession. In the end Emancipation was conceded, and when O'Connell promised later that he would compel the English to give him Repeal of the Union he was naturally and implicitly believed. Wakley could not do other than favour the Repeal party. It was in no way linked to the Liberal interests, O'Connell, as is well known, being equally ready to accept help from Sir Robert Peel as from Lord John Russell, from Lord Melbourne as from the Duke of Wellington, but the election addresses of both Wakley and Duncombe had committed them to the support of the Liberator in his demands, as all genuine promoters of the reform cause, afterwards named Chartists, were bound to do. The reformers, apart from refinements, really desired government for the people by the people. Their great idea was that the predominant will of the people should form the determining factor in making the laws of the country. This was O'Connell's own rough and ready argument for the Repeal of the Union. He had nothing to say against the union as evidencing the wish of the majority at the time, but he had a great deal to say against the corrupt way in which the majority had been persuaded to wish for what was bad for them. His great point was that the generation which he represented had no part in what their fathers had done, and that the majority of them were distinctly in favour of Repeal. Such reasoning was convincing to Wakley, who entered Parliament ready to consider O'Connell, and, therefore, the more violent followers of O'Connell, his colleagues in thought.

Wakley's attitude towards the three great movements which were engaging the attention of Parliament at the time of his election, and which have been thus cursorily brought before the reader, was simple and consistent. Firstly, he was pledged to the main doctrines of Chartism before the Chartists had actually defined their demands. Secondly, he was strenuously in favour of Free Trade, as the misery that was entailed upon the poor both agricultural and urban by the high price of food was well known to him. His relations and the friends of his childhood kept him posted in the condition of the labourer on the land, and it chanced that the plight of the west country labourers was especially cruel. His constituency of Finsbury comprised an enormous area of slums in addition to the wealthy and respectable vicinage of Bedford-square, and the appalling condition of want in which many of the dwellers in Seven Dials were forced to abide had roused in him a generous indignation. He was unable to look upon the question of feeding the poor as a party one, openly declaring in his election speeches that whichever leader would annul the working of the Corn Laws and make it possible for the poor to escape from compulsory

starvation would be the proper leader for the reformers to place at their head. These tenets, it may here be said, roused the greatest indignation in the breast of Wakley's father, Mr. Henry Wakley of Membury. This gentleman was a Tory and a Protectionist as became a landowner and a practical agriculturalist, and although proud of his son's success he made no secret that he considered his son's doctrines in the matter of Free Trade pernicious. Thirdly, Wakley supported O'Connell in his demands for revocation of the Irish Act of Union, both for party reasons and by conviction. He was not prepared to endorse O'Connell's violent denunciations of all opponents or to believe unhesitatingly in the impassioned scenes from Paradise which that masterly orator was wont to paint for the encouragement of his Celtic audiences, but with the attempt to secure the repeal of an Act, the national majority in favour of which had been dishonestly secured, and the national majority against which was in the next generation overwhelmingly large, Wakley was in full accord.

One thing may be pleaded as an excuse for this obtrusion of a chapter upon elementary politics, and it is this: Party spirit ran so high in the thirties and forties that contemporary literature is more than occasionally an untrustworthy guide to the truth. The times were transitional—they were really times of revolution—and various classes of men were so straightly set against each other in politics that they had not time to consider each other's claims to a hearing. To an Irish Catholic whoever was not a Repealer was a traitor; to an Orangeman whoever was a Papist was a Jesuit spy and a political intriguer; to a land-owner a Free-Trader appeared as a thief; to many Free-Traders a land-owner was the same; to the extreme Tories the "People" appeared as savage brutes intent on obtaining for themselves a universal and furious misrule; while to the extreme Radicals the Tory was not only a person by temperament opposed to every movement that should sweeten life for the poor, but he was a dark intriguer against the Crown, a person with a plot up his sleeve for the abduction of Princess Victoria of Kent or—to plumb the very depths of absurdity—for the establishment of the Duke of Wellington on the throne of England. The refuting of these ridiculous accusations and counter-accusations encroached so much on the leisure of the various party leaders that they often missed opportunities of comparing views and so ascertaining that in very truth they had many sentiments in common; while the air was rent with simultaneous shrill cries from such separate quarters that the political health of the country was made to appear pitiful and desperate, whereas it was in fact fairly good and improving by great strides.

(To be continued.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

ELECTION OF PRESIDENT.

A QUARTERLY MEETING of the Council was held on July 9th, the President, Mr. CHRISTOPHER HEATH, being in the chair.

The PRESIDENT reported the result of the election to the Council, as already published in THE LANCET.

Mr. Bryant, Mr. Davies-Colley, and Mr. Pick were introduced and made a declaration in the terms of the oath prescribed by the Charter of 1800, and took their seats as members of the Council.

The third, and final, report of the Committee on the Dental Surgery Regulations was presented and approved. The report recommended the adoption of the following regulations, and that they should be made applicable to all candidates who may register as dental students on or after Jan. 1st, 1897.

REGULATIONS.

I. There shall be a Preliminary Science Examination and two Professional Examinations for the Licence. The Preliminary Science Examination shall consist of chemistry, physics, and practical Chemistry. The First Professional Examination for the Licence shall consist of mechanical dentistry and dental metallurgy; and the second of dental anatomy and physiology, dental pathology and surgery including operative work, human anatomy and physiology, and surgery including pathology. (Candidates will be required to show a general knowledge of the anatomy of the whole human body.)

II. Candidates will be required to produce certificates of having received instruction at an institution recognised for the purpose in chemistry, physics, and practical chemistry before entering for the Preliminary Science Examination. (This instruction may be taken prior to the date of registration as a dental student.)

III. Candidates will be required to produce the following certificates before entering for the First Professional Examination—viz.: 1. Of having been engaged, during a period of not less than three years, in acquiring a practical familiarity with the details of mechanical dentistry under the instruction of a competent practitioner or under the direction of the superintendent of the mechanical department of a recognised dental hospital where the arrangements for teaching mechnical dentistry are satisfactory to to the Board of Examiners in dental surgery. In the case of qualified surgeons evidence of a period of not less than two instead of three years of such instruction will be sufficient. (This instruction may be taken prior to the date of registration as a dental student). 2. Of having attended at a recognised dental hospital and school: (*a*) a course of lectures on dental metallurgy; (*b*) a course of practical dental metallurgy; (*c*) a course of lectures on dental mechanics; (*d*) a course of practical dental mechanics including the manufacture and adjustment of six dentures and six crowns.

IV. Candidates will be required to produce the following certificates before entering for the Second Professional Examination, viz.:—1. Of having attended at a recognised dental hospital and school: (*a*) a course of dental anatomy and physiology; (*b*) a separate course of dental histology, including the preparation of microscopical sections; (*c*) a course of dental surgery; (*d*) a separate course of practical dental surgery; (*e*) a course of not less than five lectures on the surgery of the mouth. (These lectures may be given either at a recognised dental hospital and school, in which case the lecturer must be a qualified surgeon practising surgery, or they may be given at a recognised medical school and may form part of the course required by Section IV., Clause 3 (*d*). 2. Of having attended at a recognised dental hospital or in the dental department of a recognised general hospital the practice of dental surgery during two years. 3. Of having attended at a recognised medical school—(*a*) a course of lectures on anatomy; (*b*) a course of lectures on physiology; (*c*) a separate practical course of physiology; (*d*) a course of lectures on surgery; (*e*) a course of lectures on medicine. 4. Of having performed dissections at a recognised medical school during not less than twelve months. 5. Of having attended, at a recognised hospital or hospitals, the practice of surgery and clinical lectures on surgery during two winter sessions. 6. Of being twenty-one years of age. (The certificates of professional study will be required to show that students have attended the courses of professional study to the satisfaction of their teachers.)

V. Candidates may present themselves for the Preliminary Science Examination before entering at a dental school on production of the certificates required under Section II. This examination will be identical with Part I. of the First Examination of the Examining Board in England.

VI. Candidates may present themselves for the First Professional Examination for the Licence after the completion of six months' attendance at a recognised dental hospital and school, on production of the certificates required under Section III.

VII. Candidates may present themselves for the Second Professional Examination on production of the certificates required under Section IV., after the completion of four years' professional study from the date of registration as a dental student and after the lapse of not less than six months from the date of passing the First Professional Examination.

VIII. Synopses of the examination in chemistry, physics, and practical chemistry, and dental metallurgy will be issued with the regulations.

FEES TO BE PAID BY CANDIDATES.

The fee for the diploma of the licence in Dental Surgery is twenty guineas, and must be paid in the following manner:—

Preliminary Science Examination, each admission	...	£3	3	0
First Professional " " "	...	2	2	0
Second Professional " " "	...	5	5	0

The balance, if any, of the total fee of twenty guineas to be paid on the completion of the examinations.

The following appointments were made:—Hunterian Professors: A. W. Mayo Robson, F.R.C.S., D'Arcy Power, F.R.C.S., and Charles Stewart, M.R.C.S. Arris and Gale Lecturer: Ernest H. Starling, M.R.C.S. Erasmus Wilson Lecturer: Walter George Spencer, F.R.C.S.

The President reported that the half-yearly meeting of the Fellows had been held on the 2nd inst. and that the following resolution had been carried *nem. con.*—viz.: "That the Council be requested to instruct its representative on the General Medical Council to forward in every way which seems feasible the objects of the Civil Rights Defence Committee in the case of Mr. R. B. Anderson."

The Council then resolved that their representative on the General Medical Council be instructed to act as requested.

The Committee on the circular to be sent to the Fellows on the question of the representation of the Members on the Council presented a report, which was approved after certain alterations, and the Committee was reappointed to supervise the sending out of the circular.

A letter was read from Mr. Bryant, as representative of

the College on the General Medical Council, reporting the proceedings, and Mr. Bryant received the thanks of the Council for his services.

A letter was read from the Registrar of the General Medical Council forwarding a copy of a report by the Education Committee of that Council on the recommendations of the Council in respect to practical midwifery. It was referred to the Committee of Management.

A letter was read from the University of Durham College of Medicine calling attention to the following resolution adopted at a meeting in Birmingham of the deans of the Provincial Medical Schools—viz:—"That the Conjoint Board of London be asked to consult with the medical schools before carrying out large and important changes in their curriculum." It was referred to the Committee of Management.

A letter was read from the President and Honorary Secretary of the British Dental Association asking the Council to permit the association to hold a reception at the College on Aug. 12th. Permission was granted.

Mr. J. H. Targett was re-appointed Pathological Curator for the ensuing year.

The election of President then took place, and Sir WILLIAM MACCORMAC was elected; and Mr. N. C. MACNAMARA and Mr. J. LANGTON were appointed Vice-Presidents.

OPENING OF THE CHARING-CROSS HOSPITAL CONVALESCENT HOME AT LIMPSFIELD.

THE council of Charing-cross Hospital are to be congratulated on the site that they have secured for the convalescent home and upon the recent completion of a picturesque building amid lovely surroundings within easy access of the hospital. The charming stretch of country extending south, east, and west of Limpsfield in Surrey is well known, and its varied beauty ever affords a favourite study for the artist. The home borders upon Limpsfield common on a site 532 feet above sea level. Its arrangements are of approved workmanship and design. The earth system has been adopted for the disposal of excreta. The water-supply is derived from the springs on the property which is about nineteen acres in extent. On analysis the water proved to be of excellent quality. The design of the building is due to Mr. J. J. Thomson, A.R.I.B.A., who was selected by the council after considerable discussion of the several designs that were submitted to them. The cost of the building, the foundation-stone of which was laid three years ago, has been defrayed by Mr. Passmore Edwards, with whose name the home will always be associated. The sum of £1000 for the purchase of the site was given by Mr. George J. Drummond, one of the treasurers of the home. One of the chief difficulties in securing a suitable site for a convalescent home for a metropolitan hospital is that of easy access and conveyance of patients. The authorities of Charing-cross Hospital have met this difficulty in a manner that will merit approval and give general satisfaction. Thus the conveyance of patients from the hospital to Charing-cross Station need cause no discomfort, since it is within two minutes' walk, while the distance by rail from town is under twenty-one miles. At the other end of the journey, however, the patient must drive about three miles to the home; but the views on the way could not be more charming and the road is good for the whole distance. We trust that the council will not wait long for some substantial guarantee from the benevolent public towards the maintenance of the home, which will entail a cost of, approximately, £2000, which is not, of course, provided for by any endowment.

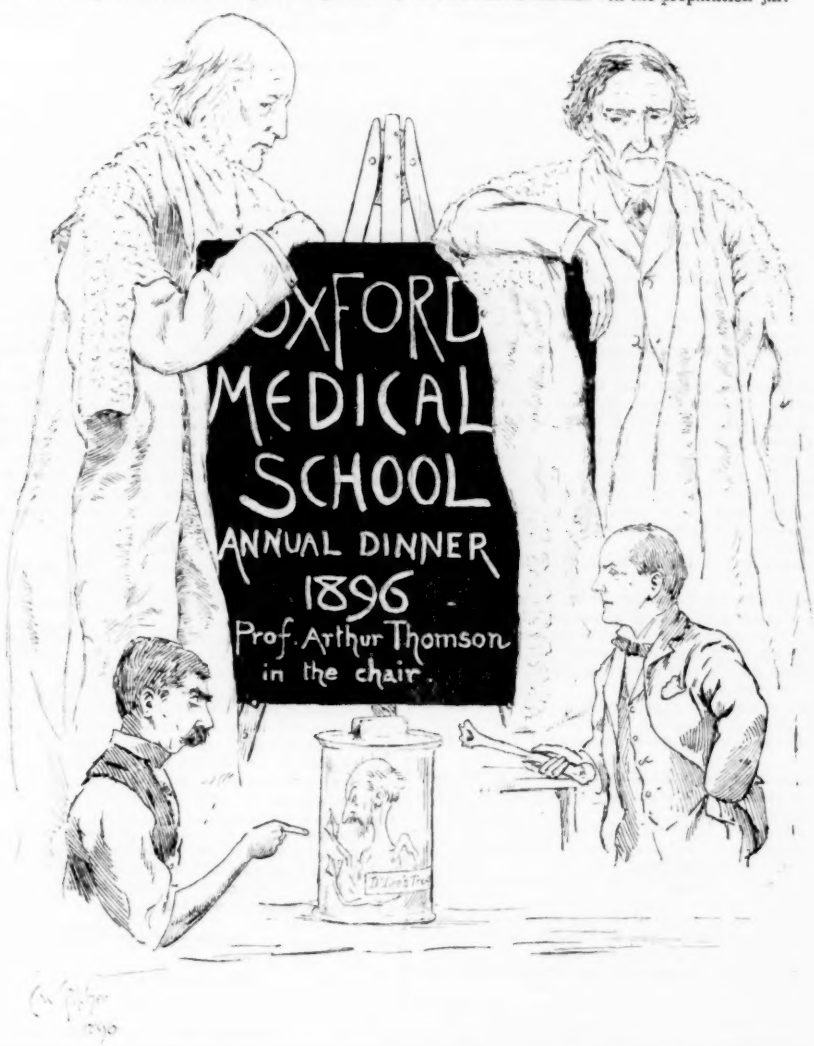
The opening ceremony took place on the 11th inst., when a large company attended to receive the Prince of Wales accompanied by the Princess of Wales and Princess Victoria. The proceedings took place in most brilliant weather. Among the visitors were Lord and Lady Wantage, Lord and Lady Lisle, Sir E. and Lady Hamilton, the Bishop of Southwark, Sir J. Fayrer, Sir Henry Irving, and Mr. Edward Terry. In reply to an illuminated address of welcome presented to His Royal Highness by Mr. John B. Martin, the Prince said that in declaring the convalescent home open he was desirous of expressing the great pleasure which it had given the Princess of Wales, the Princess Victoria, and himself to take part in the proceedings. He regretted that his brother, the Duke of Coburg, who was for many years president of the hospital

aspect is south-west and it is well sheltered from the north and east. The view from the terrace is really magnificent, comprehending the whole of the Weald to the south-east, south, and south-west. Thus the charmingly wooded heights stretching away to Leith Hill and the Hindhead to the west, the South Downs with Shoreham Gap to the south, and the hills around Eridge and in the neighbourhood of Tunbridge may all be most advantageously viewed from the terrace. The subsoil upon which the convalescent home stands consists of the lower greensand, while the building itself has been constructed with greystone which was quarried in the immediate neighbourhood. The soft tone of this substantial greystone contrasts well with the red tiles of the roof and is in excellent keeping with the philanthropic character of the building. The home contains accommodation for twenty male patients, twenty female patients, and ten children. The appointments are excellent and the sanitary

and who had always been interested deeply in its welfare, was unavoidably absent. The governors of the hospital have every reason, he thought, to be grateful to those whose beneficence had provided the almost indispensable adjunct to a hospital of a convalescent home as a resort for patients sufficiently recovered to be no longer invalids and still too incapacitated to be able to do work with advantage. The fresh and invigorating air and the charming Surrey scenery would prove, he trusted, an inestimable boon to the inmates of the new institution, and he could readily believe that a temporary sojourn there would materially improve their health, adding that he did not think the authorities could call to their aid a more valuable auxiliary as a means of increasing the utility of a hospital which, owing to its situation in one of the crowded localities in London, has no recreation grounds or gardens. After the inaugural proceedings had terminated the home was thrown open to the visitors for inspection.

THE OXFORD MEDICAL SCHOOL DINNER.

WE are enabled this week to present our readers with a reproduction of a portion of the *menu* card designed by Mr. Pilcher of Keble College. We say a portion because considerations for our space forbade our reproducing the rest, which consisted mainly of the *menu*. Oxford men will recognise with pleasure the portraits of the late and the present Regius Professor; of "Tommy," as he is affectionately if familiarly called, the Professor of Anatomy; of Dr. Ritchie, the Assistant Professor of Anatomy; and of a well-known student—in the preparation jar.



SOCIETY OF MEMBERS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE annual general meeting of this society was held at 429, Strand, on the 14th inst.

The following officers were re-elected for the current year: Mr. Joseph Smith, President; Mr. George Brown, Treasurer; and Mr. W. G. Dickinson, Hon. Secretary. The Executive Committee was appointed as follows: Dr. Danford Thomas, Dr. F. H. Alderson, Mr. H. Nelson Hardy, Dr. Thos. Morton, Mr. J. Brindley James, Mr. J. C. Smith, Dr. W. Winslow Hall, Mr. Henry W. Kiallmark, Mr. W. Percy Ashe, Mr. C. Montague Simpson, Dr. Crawford Thomson, Dr. Herbert Snow, and Fleet-Surgeon Alfred Corrie, R.N.

A report was received from the committee expressing satisfaction at the substantial progress made during the year towards the advancement of the Members' collegiate interests.

The following resolution was moved by Dr. Alderson, seconded by Dr. Morton, and carried unanimously: "That this society desires to record its gratification at the progress which has been made during the past year towards the attainment of its objects. It wishes again to thank the Fellows for their sympathy and support which it trusts will be further evidenced by the result of the forthcoming poll; and it assures the Council that if admitted to a share in the government no effort will be spared on the part of the Members to promote the interests and usefulness of the College."

A vote of thanks to the officers for the past year concluded the proceedings.

ELECTION OF DIRECT REPRESENTATIVES TO THE GENERAL MEDICAL COUNCIL.

WE have received the following addresses from Dr. R. R. Rentoul of Liverpool and Mr. George Brown of London:

To the Registered Medical Practitioners practising in England and Wales.

GENTLEMEN,—As a candidate for election as your representative on the General Medical Council I ask your support. When the 1891 election took place I was requested to oppose Mr. Wheelhouse and Sir W. Foster, all my expenses being guaranteed. As, however, Mr. Wheelhouse and Sir W. Foster consented to be re-elected I refused to be nominated. I deeply regret that these two eminent practitioners have threatened to retire from representing us. Only those few practitioners who work quietly and persistently in matters of medical reform can have any true idea of the amount of work accomplished on our behalf by Mr. Wheelhouse and Sir W. Foster. In Parliament Sir W. Foster is our ablest representative, and as Parliamentary Secretary to the Local Government Board he has stood up for the interests of the profession and the public welfare. Their loss to us would be immeasurable, and I hope practitioners will not be so indifferent as to allow them to leave us. I take this opportunity of stating that it is the duty of each practitioner to again return them unopposed. If they agree to this I agree not to stand against them, but to form one of the three candidates asking you to return us.

I think my views have for some years been before you, and that they have not been expressed in a limp or colourless manner. I am no novice in matters affecting the welfare of practitioners; my aim is to take up practical, to-day questions, the early solution of which will give some immediate return.

My views upon the following leading questions are as follows:—

1. I am opposed to the formation of an inferior order of midwifery or of medical or of surgical practitioners.

2. I am in favour of urging boards of guardians to put into operation "the extra midwifery fee order" of 1847, so that Poor-law medical officers may receive a fee of from 10*s.* to 40*s.* for each confinement conducted.

3. Of urging boards of guardians to put into operation "the general order of the Local Government Board," 1892, whereby guardians are empowered to appoint district midwifery nurses.

4. Of opening Poor-law infirmaries for the clinical instruction of senior medical students, and of the repeal of the Metropolitan Poor Act, 1869.

5. Of the Poor-law Officers' Superannuation Bill, now before Parliament: to its including *medical* officers and to its extension to Scotland and Ireland.

6. I am opposed to medical aid and other under-paid club appointments.

7. I am in favour of a revival of the apprenticeship system.

8. I am in favour of, and have first called for, a marked increase in the number of direct representatives.

9. I am in favour of increasing the stringency of the preliminary examinations.

10. I am in favour of fixing the minimum age of entry to the study of medicine at eighteen years of age.

11. I am in favour of establishing one conjoint medical examining body in each division of the United Kingdom.

12. I am in favour of making the practice of any branch of medicine for gain by any persons not registered in the Medical Register a penal offence.

13. I am in favour of the punishment of those who grant any document which professes to entitle the holder to practise midwifery or medicine or surgery unless such persons are empowered by the existing Medical Acts to grant such.

14. I am in favour of a radical amendment of the Death Registration Acts.

15. I have advocated, and still advocate, the proposed compulsory registration of stillborn infants.

16. I am in favour of the repeal, or a very stringent amendment, of the Patent Medicine Stamp Acts.

17. I am in favour of checking the sale of poisons and other dangerous drugs by chemists by means of the unauthorised re-dispensing of the prescription of a practitioner.

I have for long worked in favour of my proposal to create a widows' fund for the benefit of the widows and orphans of medical practitioners, while my views upon the better management of voluntary medical charities have been frequently stated.

I shall be willing to amplify my views upon the above important questions, affecting as they do the welfare of our calling, and shall be glad to receive the name of any practitioner who will give me his support.

Hartington-road, Liverpool. ROBERT REID RENTOUL.

To the Registered Medical Practitioners of England and Wales.

LADIES AND GENTLEMEN,—In a short time you will be again called upon to elect three direct representatives upon the General Medical Council, and I beg once more to offer myself as a candidate for that honourable position. At the last election you honoured me by recording 5065 votes in my favour and I am not without hope that on this occasion I may receive considerably increased support, especially as two of the successful candidates at the last election, Sir Walter Foster and Mr. Wheelhouse, whose invaluable services to the profession must be universally recognised, have now retired.

For upwards of twenty years I have as a general practitioner taken an active part in every movement calculated to promote the welfare of the profession. For example, I founded in 1874 the Medical Defence Association, the first organisation of the kind established in this country, and in 1890 I inaugurated the society which has since developed into the Incorporated Medical Practitioners' Association. That my efforts have not been unrecognised by my professional brethren is, I think, shown by the fact that at present I am a Vice-president both of the latter association and of the Medical Defence Union, a member of the Parliamentary Bills Committee and of the Council of the Metropolitan Counties' Branch of the British Medical Association, and hon. treasurer of the Society of Members of the Royal College of Surgeons of England.

If I should be so far honoured as to be elected one of your direct representatives, I should continue to work for medical reforms with increased hope and increased energy. More especially I would—

1. Promote the amendment of the Medical Acts so as to give the Council greater powers for the suppression of every form of quackery and unqualified practice.

2. Endeavour to make it impossible for medical aid associations and clubs which make a profit out of their medical officers, or which canvass from door to door for patients, to obtain the services of registered practitioners.

3. Oppose to the utmost the recognition by Parliament of midwives as independent practitioners.

4. Endeavour to raise the standard of education for admission to the profession.

5. Endeavour to obtain an increased number of direct representatives of the profession upon its governing body.

Trusting to be favoured with your valued support,

I have the honour to be your obedient servant,

Hart-street, Bloomsbury-square, W.C. GEORGE BROWN.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN thirty-three of the largest English towns 6525 births and 4145 deaths were registered during the week ending July 11th. The annual rate of mortality in these towns, which had been 16·9 and 17·8 per 1000 in the two preceding weeks, further rose last week to 19·9. In London the rate was 20·9 per 1000, while it averaged 19·3 in the thirty-two large provincial towns. The lowest rates in these towns were 10·6 in Swansea, 12·5 in Blackburn, 12·7 in Burnley, and 13·4 in Brighton; the highest rates were 23·0 in Salford, 23·2 in Liverpool, 23·3 in Gateshead, 23·5 in Wolverhampton, and 24·5 in Sheffield. The 4145 deaths included 846 which were referred to the principal zymotic diseases, against 627 and 720 in the two preceding weeks; of these, 423 resulted from diarrhœa, 163 from measles, 131 from whooping-cough, 64 from diphtheria, 32 from scarlet fever, 28 from "fever" (principally enteric), and not one from small-pox. No fatal case of any of these diseases was registered in Halifax; in the other towns they caused the lowest

death-rates in Derby, Bristol, Blackburn, and Norwich, and the highest rates in Leeds, Birkenhead, Wolverhampton, and Salford. The greatest mortality from measles occurred in Manchester, Portsmouth, Gateshead, and Hull; from whooping-cough in Blackburn, Croydon, Birmingham, Cardiff, and Wolverhampton; and from diarrhœa in Leeds, Bolton, Leicester, Salford, Wolverhampton, and Birkenhead. The mortality from scarlet fever and from "fever" showed no marked excess in any of the large towns. The 64 deaths from diphtheria included 47 in London, 4 in Birmingham, and 3 in Liverpool. No fatal case of small-pox was registered in any of the thirty-three large towns. There were 47 small-pox patients under treatment in the Metropolitan Asylum Hospitals and in the Highgate Small-pox Hospital on Saturday last, the 11th inst., against, 41, 33, and 39 at the end of the three preceding weeks; 11 new cases were admitted during the week, against 18, 6, and 12 in the three preceding weeks. The number of scarlet fever patients in the Metropolitan Asylum Hospitals and in the London Fever Hospital at the end of the week was 3088, against numbers increasing from 2523 to 2994 on the ten preceding Saturdays; 319 new cases were admitted during the week, against 309, 322, and 359 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 153 and 162 in the two preceding weeks declined again to 154 last week, and were 37 below the corrected average. The causes of 65, or 1·6 per cent., of the deaths in the thirty-three towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Portsmouth, Leicester, Bradford, Newcastle-upon-Tyne, and in ten other smaller towns; the largest proportions of uncertified deaths were registered in West Ham, Birmingham, Norwich, and Sheffield.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in the eight Scotch towns, which had been 17·1 and 18·8 per 1000 in the two preceding weeks, was again 18·8 during the week ending July 11th, and was 1·1 per 1000 below the mean rate during the same period in the thirty-three large English towns. The rates in the eight Scotch towns ranged from 14·9 in Aberdeen and 15·0 in Paisley to 20·9 in Glasgow and 21·0 in Greenock. The 249 deaths in these towns included 39 which were referred to measles, 25 to diarrhœa, 15 to whooping-cough, 9 to scarlet fever, and 3 to "fever." In all, 91 deaths resulted from these principal zymotic diseases, against 81 and 109 in the two preceding weeks. These 91 deaths were equal to an annual rate of 3·1 per 1000, which was 1·0 above the mean rate last week from the same diseases in the thirty-three large English towns. The fatal cases of measles, which had been 33, 28, and 38 in the three preceding weeks, further rose to 39 last week, of which 38 occurred in Glasgow. The 25 deaths referred to diarrhœa corresponded with the number recorded in the preceding week, and included 14 in Glasgow, and 4 in Edinburgh. The fatal cases of whooping-cough, which had been 15 and 22 in the two preceding weeks, declined again to 15 last week, of which 10 occurred in Glasgow and 3 in Edinburgh. The deaths from scarlet fever which had been 3 and 6 in the two preceding weeks, further rose to 9 last week, and included 4 in Glasgow, 2 in Edinburgh, and 2 in Aberdeen. The fatal cases of "fever," which had increased from 3 to 9 in the three preceding weeks, declined again to 3 last week, all of which were recorded in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 75 and 84 in the two preceding weeks, further rose to 88 last week, and exceeded by eight the number in the corresponding week of last year. The causes of 41, or more than 7 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had increased in the three preceding weeks from 22·5 to 25·7 per 1000, declined again to 25·4 during the week ending July 11th. During the thirteen weeks of last quarter the rate of mortality in the city averaged 23·3 per 1000, the rate during the same period being 17·8 in London and 16·7 in Edinburgh. The 170 deaths registered in Dublin during the week under notice were within two of the number in the previous week, and included 29 which were referred to the principal zymotic diseases, against 14 and 31 in the two preceding weeks; of these, 19 resulted from diarrhœa, 7 from whooping-cough, 1 from scarlet fever, 1 from "fever," and not one either from small-pox, measles, or diphtheria. These 29 deaths were equal to an annual rate of 4·3 per 1000, the zymotic death-rate during the same period being 3·4 in London and 1·5 in Edinburgh. The fatal cases of diarrhœa, which had increased from 1 to 17 in the four preceding weeks, further rose to 19 last week. The deaths referred to whooping-cough, which had been 2 and 5 in the two preceding weeks, further increased to 7 last week. The mortality from scarlet fever and from "fever" showed a marked decline from that recorded in the preceding week. The 170 deaths in Dublin last week included 46 of infants under one year of age, and 21 of persons aged upwards of sixty years; the deaths both of infants and of elderly persons showed a decline from the numbers recorded in the preceding week. Seven inquest cases and 8 deaths from violence were registered; and 48, or nearly a third, of the deaths occurred in public institutions. The causes of 15, or nearly 9 per cent., of the deaths in the city last week were not certified.

THE SERVICES.

INDIA AND THE INDIAN MEDICAL SERVICE.

The following appointments are announced:—Surgeon-Lieutenant-Colonel C. L. Swaine, M.D., Madras Medical Establishment, is appointed to be Medical Officer of the 6th Infantry, vice Surgeon-Captain G. Bidie, appointed Medical Officer, 4th Infantry. Surgeon-Captains J. Garvie and J. S. S. Lumsden are appointed to officiate as Civil Surgeons, 2nd Class, and to be posted, respectively, to the Bijnor and Kheri Districts.

NAVAL MEDICAL SERVICE.

Surgeon Reginald T. A. Levinge has been appointed to the *Alecto*.

VOLUNTEER CORPS.

Artillery: 1st Cheshire and Carnarvonshire: Surgeon-Captain E. J. Lloyd, M.D., to be Surgeon-Major. *Submarine Miners, Royal Engineers:* The Forth Division: Richard James Arthur Berry, M.D., to be Surgeon-Lieutenant. *Rifle:* 1st Volunteer Battalion the Royal Warwickshire Regiment: Surgeon-Lieutenant R. A. Newton to be Surgeon-Captain. 5th (the Hay Tor) Volunteer Battalion the Devonshire Regiment: Surgeon-Lieutenant L. J. C. Hains resigns his commission. 1st Bucks: Francis James Grindon, gent., to be Surgeon-Lieutenant. 2nd Volunteer Battalion the Manchester Regiment: The appointment of Mr. W. E. Husband as Surgeon-Lieutenant, which appeared in the *London Gazette* of June 2nd, 1896, is cancelled at his own request. 6th Volunteer Battalion the Gordon Highlanders: The undermentioned gentlemen to be Surgeon-Lieutenants: Alexander Grant, M.B., and Thomas Alexander Sellar, M.B. 1st Tower Hamlets: Surgeon-Lieutenant H. Dutch to be Surgeon-Captain.

VOLUNTEER MEDICAL STAFF CORPS.

The annual inspection of the two Manchester companies of the Volunteer Medical Staff Corps took place in very bad weather on the 4th inst., in a field near the Old Trafford Station. Notwithstanding the persistent and heavy downpour of rain the members of the corps were in no way discouraged and acquitted themselves to the complete satisfaction of their inspecting officer, Surgeon-Colonel J. H. Hughes, principal medical officer of the North-Western District. The corps was under the command of Surgeon-Major W. H. B. Crockwell, V.D. The other officers present were: Surgeon-Captains W. Coates, I. J. E. Renshaw, J. J. K. Fairclough, and J. B. Mann; Surgeon-Lieutenants Gill and Phillips; Quartermaster-Captain B. R. Howell, Quartermaster-Lieutenant W. F. Dickinson, and the Rev. Canon J. D. Kelly, the chaplain. There were about 200 of all ranks on parade, exclusive of the band and buglers. After the march past some drills and exercises were gone through. No. 1 Company engaged in stretcher drill while No. 2 Company formed a collecting station and had the care of their wounded comrades. Two ambulance waggons were brought into use. At the close of

the inspection the men were briefly addressed by the inspecting officer, who expressed satisfaction with what he had seen. "He had been struck," he said, "with their fine physique and considered they were superior to some of the line regiments he had seen." This testimony to the fine physique of some, at all events, of our town dwellers will be received by many with surprise.

ENTERIC FEVER IN INDIA.

The loss of life amongst young officers and soldiers in India from this cause is very lamentable. Notwithstanding all the sanitary improvements and changes that have taken place with the view of benefiting the British force serving in that country, we have not by any means succeeded in reducing the amount of typhoid fever. We rarely take up an Anglo-Indian paper that does not contain some reference to the subject, or record the death of some young officer from an attack of enteric fever. We regret to notice the decease of Lieutenant Garnet Wolseley, of the Derbyshire Regiment, at Ranikhet of this fever. The deceased officer was the only son of Sir George Wolseley, commanding the Lahore District, and nephew of Lord Wolseley.

Cholera has broken out at Jalozai, on the road between Peshawur and Cherat, and all passes for British soldiers to Cherat have been consequently stopped for a time. There has also been much cholera in Bangalore and in the goldfields of India.

MORTALITY ON THE GOLD COAST.

It is quite time that serious attention should be given to the very grave amount of mortality that has recently prevailed among European officials at the Gold Coast, and Dr. Farquharson has done good service in asking Mr. Chamberlain, the Colonial Secretary, whether nothing could be done to remedy this very unsatisfactory state of matters. Mr. Chamberlain said that his attention had been directed to the exceptionally large number of deaths which had occurred among the European residents on the Gold Coast in the early part of this year, and added that he had already addressed a communication to the Governor on the subject. He indicated the steps that were being taken to improve the conditions of life on the Gold Coast—notoriously a most unhealthy station.

THE DRAINAGE OF GOSPORT.

A conference of the War Office, the Admiralty, the Local Government Board, and the Gosport Council has taken place with regard to the drainage of the district, the views of the latter body being against a scheme of arterial drainage for the whole district. The representatives of the service departments expressed the opinion that if a suitable scheme were submitted they would be prepared to contribute towards the cost a capital sum in proportion to the rate payable by them, and also a sum towards the maintenance of such a system. The council has decided to consult an expert as to engineering details, but the opinion is expressed in this quarter that until a constant water-supply is provided no scheme should be undertaken by the parish.

YELLOW FEVER AMONG THE SPANISH TROOPS.

According to intelligence received through Reuter's Agency from Havana, yellow fever is prevailing to an alarming extent amongst the Spanish troops, and is attended with a heavy mortality.

The *Army and Navy Gazette* says "The excessive prevalence of venereal disease in our Army as compared with foreign armies has received considerable attention as the result of recent official representations on the part of Sir George White. Taking an average of four years, 1889 to 1892, our Army had 207 per 1000 laid up, while Russia had only 42·4, and France 44·3 per 1000. One-fifth of the British Army is affected, and at Aldershot one-fourth of the force is down. In the Italian Army venereal increased to 10 per cent. of the strength after the abrogation of the enforced examination of prostitutes, while before that it was only 5 per cent. The Italian Government re-established the examination system."

At the quarterly meeting of the directors of the Naval Medical Supplemental Fund, held on the 14th inst., Inspector-General T. Russel Pickthorn in the chair, the sum of £59 was distributed among the several applicants.

Owing to the proximity of the small-pox infected areas the encampment of the Volunteer battalions attached to the 53rd Regimental District will not take place this year.

Correspondence.

"Audi alteram partem."

"THE RELATIVE EFFICIENCY AND COST OF PLUMBERS' WORK."

To the Editors of THE LANCET.

SIRS,—I have read with great interest a portion only as yet of your valuable and very thorough report on sanitary work in THE LANCET of last week. What struck me as slightly inaccurate are some statements as they occur in Note V. In that note the words occur, "the great objection to this arrangement is that soapy water accumulates in and around this standing waste and," &c., and the note points to the cause as being the bath-water running through the overflow. Now the water in my baths, of which I have two of iron with no wooden casing, is seldom above a foot or two and has very seldom, if ever, overflowed in one and never in the other, and yet I have found the soap on the waste and the smell of stale soapy water. Some time ago I had occasion to remove the china fitting in order to repair the broken wire by which the waste valve is raised. To my surprise the hollow interior held a quantity of water. This water had got through the two small holes that are in the upper surface to allow of wet soap draining. They are present in Shanks's pattern, and I presume many others, but are not shown in your Fig. 22. When wet soap is placed in these depressions the water trickles from it down these holes and on to the hanging waste and so creates the nuisance. I emptied the hollow cavity of the china fitting and corked up the two small holes. I have had no smell of stale soapy water since, and I have no doubt that the waste is quite clean if I were to investigate again. The structure you describe may be different from Shanks's, but I maintain that the trouble of a soapy waste is met by having the soap dishes impervious and that the same has nothing to do with the overflow.

I am, Sirs, yours obediently,

Southbourne, July 10th, 1896. Y. DAWSON, M.D.

THE COUNCIL OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

To the Editors of THE LANCET.

SIRS,—I can assure Mr. Hardie that I had no intention of questioning his motives, which, I have no doubt, are excellent. I thought his letter ill-timed and injudicious and I think so still, inasmuch as the Council of which he is a member is just about to issue an "elucidatory statement" for the information of the Fellows on the matters concerning which he writes. If eminent Councillors elect to air their views in the press they must expect criticism; there is a tendency among them to treat the members as still *in statu pupillari* and to resent any expression of opinion accordingly. Mr. Hardie's answers to my questions are what I expected. On the first may I be allowed to say that the charters are not the laws of the Medes and Persians. They have been altered before and may be altered again. On the second, that although the Council has occasionally consulted the Members on current questions, it has never adopted their views unless these happened to coincide with its own, and that for years it entirely disregarded the resolutions carried again and again at the annual meetings. On the third question that Mr. Hardie, as I thought, took the Fellowship because it was an "honourable distinction," and not because it gave him a right to vote for and sit upon the Council. I am much obliged to him for his concluding advice, which, however, not being a practitioner of "pure surgery," I have no intention of taking.

I am, Sirs, yours faithfully,

W. G. DICKINSON.

REMOVAL AND DISPOSAL OF EXCREMENT.

To the Editors of THE LANCET.

SIRS,—In the kindly notice which you give in your issue of July 11th of my views and practices with regard to excrement disposal you say that my experimental well is in the Thames Valley. This is an error, the well in

question being at Andover in Hampshire in the middle of a garden, which has been manured with the excremental refuse of some twenty cottages for more than ten years. I trouble you with this correction because I hope to be at Andover during August and September and it will be, as it always has been, a pleasure to me to exhibit this well and garden to any of your readers who are interested in questions of rural hygiene. You are quite right in saying that the choice of methods is largely an economical question, and I fully agree with you in thinking that no one method is universally applicable. We are apt to be too procrustean in the matter and to forget that circumstances alter cases. With regard to the economical aspects of the case, may I remind you that there are economic limits to crowding and that locomotion in central London is painfully slow from this cause. I would further remind you that the rates of this house have risen 87 per cent. in the last twenty-five years, while the interest on money has steadily decreased; and that in your valuable report on plumbing you estimate that it costs from £400 to £600 in order to make the average London house fairly secure against the dangers of putrefaction which are going on beneath and around it. Are we not approaching our economic limit?

I am, Sirs, yours truly,

Wimpole-street, W., July 14th, 1896. G. V. POORE.

DINNERS FOR CONVALESCENTS.

To the Editors of THE LANCET.

SIRS,—I trust you will allow me to appeal in your columns to all who have the welfare of the deserving working men and women of this metropolis at heart for assistance in a charity which for the last fifteen years has been helping them at a time when sickness has so reduced their strength as to render them, although convalescent, unfit to return to the work by which they earn "daily bread" for themselves and their families. The number of convalescent homes is only sufficient to provide for a very small proportion of those thus situated, and the Convalescent Dinners Society undertakes the duty of supplementing this deficiency by granting to well-authenticated cases an order for fourteen daily dinners on a coffee tavern near to the convalescent's home. The application form has to be filled in and signed by a clergyman or by a recognised district visitor, and, when passed by the committee, the order for the dinners is sent to one or other for delivery, thus guarding against fraud and misrepresentation. The value of this charity is acknowledged by all those who work amongst the poor; and the working men and women who reap the benefit of it are very grateful for the good food which enables them to return to their work so much sooner than would otherwise be the case. During the last nine months the Convalescent Dinners Society has granted fourteen daily dinners to nearly 1000 poor convalescents. Its funds are, however, now exhausted; and I, therefore, confidently appeal for assistance to all who can afford to give, so that the society may be enabled to continue its good and useful work.

Donations may be sent either to myself as hon. treasurer or to Miss Carbonell, hon. secretary, 114 Queen's-gate, S.W., or can be paid into the account of the Convalescent Dinners Society at the London and County Bank, South Kensington Branch. I have the honour to be, yours faithfully,

CHELMSFORD.

Chairman, Convalescent Dinners Society.

5, Knaresboro'-place, S.W., July, 1896.

THE BRITISH MEDICAL ASSOCIATION: THE ANNUAL TEMPERANCE BREAKFAST.

To the Editors of THE LANCET.

SIRS,—Will you kindly allow me to announce that the usual temperance breakfast will take place on Thursday morning, July 30th, in the Great Central Hotel, Carlisle, at eight o'clock, when the Lord Bishop of Carlisle, a vice-president of the League, will preside, supported by Mr. Miles MacInnes, J.P., Dr. Henry Barnes, president, and other members of the British Medical Association. It is particularly requested that members who desire to attend will make early application for invitations to Mr. J. L. Fenn, 33, Paternoster-row, London, E.C.

I am, Sirs, yours truly,

London, July 13th, 1896. ROBERT RAE, Secretary.

"THE REMUNERATION OF MEDICAL MEN."

To the Editors of THE LANCET.

SIRS,—I have read with much gratification the letters of "M.D." and "M.R.C.S., L.R.C.P." in THE LANCET on the above subject. It seems a strange thing to me, considering the extremely congested state of our profession, that the parents and guardians of young men do not warn them against entering upon a calling where competition is so very keen and remuneration for the most part so dreadfully small, especially when the cost of a medical education is so heavy and the examinations are so difficult. There are men whose educations have cost as much as £2000 who now, since they have passed their final examination, are glad to accept a sixpenny fee and give a bottle of medicine (?) as well. Again, why do young people choose our profession as a means of gaining a living when they have not the slightest love for the work and when there are other occupations where the expenses are less, the work easier, and pay greater. I heard a young surgeon remark the other day: "I am sorry I ever went in for this starving-out job." I have met many of this type. Young medical men are often blamed for taking miserably low fees, but what is a man to do on finding himself fully fledged, with the accompanying honour of course, and not a farthing in his pocket, all having been spent in getting him into our noble profession? He soon forgets the honour part of the business and turns to undersell his struggling brethren as the only means of obtaining patients and a living. He thus contrives to make a miserable livelihood until he in his turn is underbid by a new arrival who also must have bread, and so down go the fees and down, down goes the profession, and the struggle of the poor practitioner becomes harder and harder. In the meantime more are joining and the flow of fresh men into our ranks is for ever increasing. On, on they come, without a thought, it seems, of what they are coming to. And what are our consultants, lecturers, and examiners doing all this time? They pocket their big fees, lecture at the hospitals, and hold out every inducement for men to enter the profession through their individual classes. They never say a word, as far as I know, about the struggle and hardship to get bread in after years. I cannot persuade myself that our great men are ignorant of the deplorable state of things amongst the rank and file of the profession. If not, what about duty to their brethren who are practising and to the youth who would become a practitioner? and, more, what about the honour of the great and noble profession? They talk most about its dignity, but do they attempt any reform? and still the power is all in their hands. I agree with "M.R.C.S., L.R.C.P." when he says "the numbers can be reduced by raising the standard of the entrance examination and making it competitive that only a fixed number of new men are admitted yearly." This, I think, would be a point in the right direction, but I would say some broader and further reaching scheme is required, for, with the number of men qualifying each year in vastly increasing numbers, if something is not soon done the outlook for the bulk of us as well as for those who are to come is gloomy and sad indeed. For my own part I have been scouring England for the past twenty-one months in search of an opening where setting up would not mean the sharpest of competition, but I have failed to find such a spot. I am, therefore, forced to be idle as I do not like the idea of taking a part of another man's living away from him—a living which he has had a great struggle to get. Had I not possessed some small private means I fear ere now I would myself, notwithstanding my dislike of the idea, have been forced to join the already large army of sixpenny doctors. The pinch of poverty makes us do strange things at times. As it is I must wait, like hundreds of my brethren, "till something turns up," and do my best in the meantime to uphold the dignity of our noble calling. Concluding, I beg forgiveness for occupying so much of your space, and as a humble member of the profession I thank you for taking up the subject, which so much requires discussion, for by so doing you are conferring a benefit upon all of us and deserve our hearty support and thanks.

I remain, Sirs, yours faithfully,

June 27th, 1896. ONE OF THE CROWD.

To the Editors of THE LANCET.

SIRS,—"Another M.R.C.S., L.R.C.P." is hard upon "M.R.C.S., L.R.C.P." He is so angry with him that he

cannot even understand a sentence the meaning of which is obvious, though its construction is not quite flawless. But it is not easy to see how so much indignation is justified. Does a man act contrary to the canons either of medical morality or of general probity who, having (for instance) a child brought to him with practically no morbid symptom beyond a slight rise of temperature, prescribes a simple refrigerant and requests to see the patient again next day? At the moment he has not made, and cannot make, a diagnosis. Yet if he says "I don't know what is the matter and therefore I will do nothing," he will most probably lose his patient. Perhaps he ought, conscious of his own rectitude, to be large-minded enough to ignore such unpleasant consequences; but his landlord and his butcher are probably men less nobly planned, who will prefer a cheque to any moral sentiment, however exquisite, which he may be able to offer them. Sirs, I think a man may be honest and upright without either being, or pretending to be, Quixotic. As to the other proposals of which your correspondent so heartily disapproves they would doubtless prove difficult to realise, but do not on that account deserve his scorn. That there should be more general practitioners on the General Medical Council seems to me only just and fair, and a competitive entrance examination, while it would relieve the overcrowding which is so crying an evil, would inflict upon the embryo doctor no hardship greater than that which the intending army officer and civil servant have already to bear.—I am, Sirs, yours truly,

July 6th, 1896. NO PHARISEE.

THE BATTLE OF THE CLUBS.—XXXVII.[1]

(FROM OUR SPECIAL COMMISSIONER.)

(*Continued from p. 147.*)

FRANCE:—THE MUTUALIST MOVEMENT OF 1848.—THE GENEROSITY OF THE MEDICAL PROFESSION.—THE ORGANISATION OF MEDICAL UNIONS.—THE LAW ON DISPENSING.—THE STATE RECOGNITION OF A MINIMUM FEE.

To thoroughly understand the relations of medical men in France with the benefit societies it is necessary to enter into the spirit of that great popular upheaval, the Revolution of 1848. We must know something of the romantic school which then reached its apogee. We must appreciate the full force of the great wave which for a while swept over Europe. The movement originated in France. In its first explosion it drove Charles X. from the throne, and in its final triumph it substituted the Republic for the Liberal Constitutionalism of Louis Philippe. The workman then became the object, not merely of a widespread sympathy and commiseration, but also of exaggerated admiration and respect. He was the embodiment of all civic virtues. By giving him political power, the right to vote, he would surely regenerate the world. All classes combined to help him to raise his position; and in this generous endeavour none were more willing and more active than the members of the medical profession. If a workman owed his medical adviser 100 francs the latter was quite willing to accept 20 francs or 25 francs in settlement of his claim. It was, indeed, the custom to send in a bill claiming the usual fees and then perhaps a quarter of the sum would be accepted in settlement. This system had at least the great advantage of placing the workman under a moral obligation to his medical adviser. The workman was then able to realise the extent of the sacrifice the medical man had made so as to help him in his poverty. At that time, however, what is known on the Continent as the mutualist movement met with general support. The creation of benefit societies was advocated on all sides. It was suggested that workmen should insure themselves against sickness by the weekly payment of a small sum. So much can be said in favour of this form of foresight and thrift that, as might naturally be expected, the medical profession enthusiastically supported the movement. It must be remembered that we are now describing the period when the romantic school was in the ascendant. Realism in literature barely existed and science as applied to sociology was not yet a political factor. It was not, therefore, to be expected that the medical profession would be able to realise the likely consequence of their acts. Yet it was not long before medical practitioners began to perceive that they did not, under the mutualist system, obtain more from the workmen. This would not have mattered. Medical men in all countries have been willing to attend on the deserving poor for little or no pay; but they naturally expect some show of gratitude, some appreciation of the sacrifices they are making. As a member of a mutualist society the workman felt and expressed no gratitude to his medical attendant. On the contrary, he looked upon him as his paid servant who at best only did his duty. Yet the medical attendant received no more, as often as not he received even less, than the same workman had given him previously to the formation of a mutualist society. Nevertheless, even this ingratitude might be endured were it not followed by other and greater evils.

The mutualist societies were at first founded exclusively for the benefit of working men. In a little while, however, small tradesmen, clerks, and others manifested a strong desire to participate in the benefits of these organisations. Then some workmen became rich, and in their turn employed other workmen. The more scrupulous among them recognised that they had no right to participate in the benefits of institutions organised solely for the purpose of helping the poor. They, therefore, withdrew from the benefits; and if, out of love for the cause, they continued to pay their subscriptions they enrolled themselves as honorary members. Others more selfish and more avaricious continued to pay and continued to draw the benefits. Then commercial men, small tradesmen, pensioners, and persons living on small incomes began to establish mutualist societies and insure themselves against sickness. The philanthropic object, the desire to help the poor, was soon merged in a selfish effort to economise the money of the well-to-do, and this of course at the expense of the medical profession. As a result, the mutualist societies have amassed a large capital, and this in spite of the fact that the subscriptions paid by the members is altogether insufficient. Yet there have been no economies realised in the out-of-work allowances, the pharmaceutical expenses, and the burial expenses. The saving has been effected on the work of the medical men.

In 1881 Dr. Beraud of Charlieu wrote a report on this subject. He then estimated that the medical officers only received 35 centimes (3½*d.*) for each visit paid to

[1] The previous articles on this subject were published in THE LANCET on the following dates: (1) Aug. 24th, 1895, Brussels; (2) Aug. 31st, 1895, Brussels; (3) Sept. 21st, 1895, Portsmouth; (4) Sept. 28th, 1895, Portsmouth; (5) Oct. 5th, 1895, Eastbourne; (6) Oct. 12th, 1895, Lincoln; (7) Oct. 26th, 1895, Lincoln; (8) Nov. 2nd, 1895, Grimsby; (9) Nov. 9th, 1895, Bexhill-on-Sea; (10) Nov. 16th, 1895, Hull; (11) Nov. 23rd, 1895, Hull; (12) Dec. 7th, 1895, York; (13) Dec. 14th, 1895, Northampton; (14) Dec. 21st, 1895, Fermanagh Medico-Ethical Association; (15) Dec. 28th, 1895, Northampton; (16) Jan. 4th, 1896, Birmingham; (17) Jan. 18th, 1896, Birmingham; (18) Jan. 25th, 1896, Club Practices in Rural and Mining Districts; (19) Feb. 1st, 1896, The Formation of a Provident Medical Association at Folkestone; (20) Feb. 8th, 1896, The Manchester Medical Guild and Medical Aid Associations; (21) Feb. 15th, 1896, The Leicester and Leicestershire Provident Dispensary; (22) Feb. 22nd, 1896, The Organisation of the Profession at Leicester; (23) March 7th, 1896, Loughborough: Local Efforts defeated by Consultants from Neighbouring Towns; (24) March 14th, 1896, Medical Aid Societies in Small Heath; Medical Clubs at Stockport; (25) March 21st, 1896, General Meeting of the Profession and the Formation of a Union at Nottingham; (26) April 4th, 1896, Nottingham; the London and Manchester Industrial Assurance Company, Limited; the Public-house Medical Aid Clubs; United Action at Lincoln; (27) April 11th, 1896, Leicester and Wolverhampton; a Hastings Dispensary wound up; (28) April 25th, 1896, Walsall, Formation of a Medical Union; the Medical Profession and the Friendly Societies; Trade and Medicine; the Family Clubs; Women's Public-house Clubs; (29) May 9th, 1896, Sheffield: An Ancient Medical Society; Workmen Sweaters; The Old Grievances; Probable Formation of a Medical Union; (30) May 16th, 1896, Lincoln: Medical Protection Fund started; Benefit Societies and Medical Men; Medical Union at Nottingham; (31) May 30th, 1896, Derby: The Abortive Movement of 1872; the Apathy of the Profession; Female Canvassers; the Gainsborough Dispensary; Lincoln Medical Protection Fund; "A Doctors' Strike"; (32) June 13th, 1896, The Bitter Cry of the Medical Aid Associations; letter from a Member of the Manchester Executive; Lincoln: the Provident Medical Association; Lincoln Medical Protection Fund; Fifeshire Medical Association and Medical Aid Appointments; (33) June 20th, 1896, the General Medical Council and the Medical Aid Associations; (34) June 27th, 1896, Leeds: Club Patients at the Infirmary; Failure of Former Efforts to control Club Work; Malingering; Methods of Competition; "Sixpenny and Shilling Doctors"; "One Mark" Vaccination; West Wiltshire and Surrounding Districts; Lincoln Medical Protection Fund; (35) July 4th, 1896, Brussels: A Twelve Months' Strike; the Medical Men fully Compensated out of the Strike Fund; the Labour Party and the Medical Men; Increased Strength of the Medical Union; the Difficulties and Troubles of the Benefit Societies; Medical Aids and Insurance Canvassing; the Coventry Public Medical Service; Medical Practice by Contract as viewed in California; (36) July 11th, 1896: Lincoln Medical Protection Fund; Nottingham and District Medical Union.

members of the mutualist societies. He added: "There exist 7000 legally recognised mutualist societies, and some 3000 to 4000 mutualist societies that are not legally constituted (registered). They have about one million members inscribed and 140,000 honorary members, and they possess a pension fund of 92,000,000 francs. Now, these reserves are constituted in part by subventions from the State, in part by the subscriptions of honorary members, and finally and for the greater part by the reduction on their honorarium which the medical men have accepted. The annual receipts amount to about 20,000,000 francs, and the expenditure to about 16,000,000 francs of which only 2,000,000 francs go to the medical officers. If we add to the million subscribers their wives and children, who, as a rule, are also entitled to the attendance of the medical officers, we reach a total of about 4,000,000 persons, who for the sum of 2,000,000 francs, or 50 centimes (5*d*.) per head, may call in the services of a medical officer at all hours of the day or night."

M. Léon Marie, member of the commission appointed to investigate the statistics and finances of the mutualist societies, states that these societies numbered 1,420,000 members in 1890, without counting the women and children, who, though paying no subscriptions, were admitted to medical benefits. Many of these societies have become practically insurance companies. They often pay a pension to the family when the father dies prematurely. They differ from insurance companies inasmuch as they do not pay dividends to shareholders, but they are similarly dependent on the soundness of their calculations with regard to the average of chances. It seems clear, however, that this has not been done, and that any accountant would recognise that the subscriptions are too low for the responsibilities assumed. If bankruptcies have not been more frequent this is due to the generous sacrifices made by the medical profession.

Of late a National League of Mutualists has been formed to deal with all these questions, and the medical men on their side have been organising themselves for the same purpose. A society called the Concours Médical was founded some years ago. It propagates principles of solidarity in the ranks of the medical profession and seeks to ameliorate the material and moral position of medical men. Of the 16,000 medical men in France some 4000 are members of this organisation. They pay an annual fee of 10 francs per annum and receive in exchange the organ of the society, *Le Concours Médical*, which is edited by Dr. A. Cezilly. Under the energetic leadership of this gentleman the Concours Médical has founded a medical mutualist society for the purpose of giving pensions to medical men who are too old to work, who are struck down by some sudden illness or accident, and in the event of death to help their widows or families. But, what is more to the point, the Concours Médical has sought to organise medical syndicates or unions for the special purpose of defending the economic interests of the profession. In response to this active initiative about 3000 medical men are already in union. Of the various unions formed the Paris Medical Syndicate is the strongest, for it counts close upon 600 members. There are in all 70 medical syndicates throughout France and the number of members is daily increasing.

It will be seen that the grievances against the mutualist societies in France are very similar to what has been described when dealing with the benefit societies of England. The position of medical men in France, however, differs considerably. They may organise unions—this is especially sanctioned by the law on syndicates of 1884; but in certain cases a strike would be illegal. All medical men are compelled to serve the State and the commune or municipality. The law of 1893 dealing with the medical aid to be given to paupers stipulates that the central government or State, the local government or commune, shall between them pay the medical men who attend upon paupers. The fee is to be half the lowest local tariff. As this is generally 2 francs a visit the medical man who attends a pauper receives 1 franc from the local authorities. It will be seen that the medical man is much better paid for attending paupers than for attending even the well-to-do members of mutualist societies. And in England how many club practitioners are there who receive 10*d*. for visiting members of benefit societies? But against these conditions for attendance on paupers medical men cannot strike; they must obey when requisitioned by the authorities. The same rule applies for all judiciary expert work, nor are they at liberty to refuse their services if a commune establishes compulsory vaccination. In this latter case the commune pays half the usual fee if the medical man cannot obtain payment from the person vaccinated. Since the medical syndicates have been formed they have been able to negotiate on equal terms with the authorities for all these public services. On the other hand, they can confront the mutualist societies with a demand for a payment at least equal to that which the State allows for attending paupers. If, as asserted, the average payment of the mutualist societies is 35 centimes per visit, it should be increased to the extent of 65 centimes so as to come up to the pauper level. In England there are hardly any club practitioners who receive a franc or 10*d*., and many do not receive the 3½*d*. of the French average, and yet they have to supply medicine. In France the law of the year XI. of the Republic forbids the dispensing of medicines by medical men. Only in the districts where there is no druggist is the practitioner allowed to give medicine to his patients, but even in that case he is not allowed to sell medicine to the public. There are some 2500 medical men living in communes where there is no druggist's shop. Medical men could not, therefore, establish a dispensary, as has been done in England. The law insists that drugs should only be sold by a fully qualified apothecary, and such an apothecary must not have a financial partner, he must not be employed by a financial society—the capital invested to open a druggist's shop must belong to the druggist himself. In this wise, if an error is committed and the druggist is fined it is out of his own money that the fine is paid. Certainly this law has been circumvented on many occasions; nevertheless, it suffices to prevent both benefit societies and medical men attempting to establish dispensaries. Nor are medical men allowed to have any common interest with a druggist in the sale of any particular remedy.

The various medical syndicates of France have formed a national federation so as to be able to express in a united manner the desires common to all. This federation of the medical syndicates is now seeking to bring about some very important reforms. Its members wish to substitute for the annual payment of a fixed sum for each member of the mutualist societies a payment of a fee for each consultation given. They are in such cases willing to accept half the usual fee—that is, 1 franc instead of 2 francs. They insist, however, that it should be clearly understood that in so doing they are making the society the present of 1 franc for each consultation they give. Becoming thus the largest subscribers to the mutualist societies, they claim a right to share in the management and, above all, to control the list of membership. Every member of a mutualist society must be made aware that he is receiving medical advice as a favour and this at half or a quarter the usual price. The medical officer of such a society should reserve to himself the right to refuse to render such a service. Every patient who receives a visit from a medical man and pays only 1 franc should know that he is receiving a present of 1 franc from his medical attendant, for the latter is entitled to claim at least 2 francs. If the mutualist societies of France have now reserve funds amounting in all to about a hundred million francs a good half of that sum may be looked upon as contributions given by the medical men, who have resigned the fees they had a right to demand. As they have received no thanks for this generous sacrifice the medical syndicates are determined that the position of the medical profession shall be clearly defined. They urge that henceforth the mutualist societies should be put on a business footing, and that there should be accountants appointed to establish what ought to be paid. If, as is probable, it is shown there is an average of from three to four days' sickness per annum and per head, then the subscription shall be from 3 to 4 francs per member for medical attendance, and about 1 franc 50 centimes for medicaments. If the average for out-of-work allowance is four days, then, at 2 francs per day, 8 francs more per annum would be required. Adding to this funeral expenses and old-age pensions, the mutualists would probably have to pay from 20 to 30 francs per annum. Yet they at present rarely subscribe more than 15 francs, though all these benefits are promised. These promises, however, are only fulfilled at the expense of the medical profession. The medical syndicates, however, are going to put a stop to all this. First of all they will not allow anyone to be admitted as a member

of a mutualist society if he is not medically examined, and they mean to claim a two-franc fee for such examinations. Then they intend to reserve to the medical profession the right of excluding all unsuitable members—that is to say, persons whom they think are capable of paying the ordinary medical fees. They further propose that in all published accounts or balance-sheets of the mutualist societies their medical officers should be fully credited for the amounts they have sacrificed in accepting reduced fees. Thus it may be said that by mutual agreement and general custom a minimum fee exists in France. That fee is 2 francs, or 1*s.* 8*d.*, without medicine. In England, considering that wages and salaries are higher and money, generally speaking, cheaper, we might very well insist upon 2*s.* as the minimum fee, without medicine. The nearest approach to a decent minimum fee that exists in England is 2*s.* 6*d.* with medicine. There is no reason why in England, as well as in France, medical men should not make it quite clear that any work done below that figure is charity. The difference between the sum actually received and what the sum should have been according to this minimum must be entered to the medical officer's credit as a contribution to the funds of the society for which he has been working. If this was done the members of medical aid organisations would indeed be startled to see the enormous amount of their indebtedness to the medical profession. The French medical syndicates are to be congratulated on having put the matter in so telling a manner.

Altogether the position of French medical men seems to be much more favourable than that of their English colleagues. The friendly societies cannot establish dispensaries as in England, nor can any layman speculate in organising medical services. The harm done in England to the dignity and the interests of the medical profession by life and sick insurance companies is quite unknown in France. Then there is incidentally the State recognition of a minimum fee, since the authorities pay half that fee to the medical man when he attends a pauper. It is useful to have a solid State sanction for the minimum fee. On this the medical syndicates can base their agitation, and these syndicates, though but in the infancy of their existence, are nevertheless more numerous than the few medical unions which have been formed in England. Finally, and above all things, the medical profession in France is not so overcrowded as in our own country.

THE MEDICAL PROFESSION IN STOCKPORT AND THE FRIENDLY SOCIETIES.

The medical men of Stockport have for a long time been dissatisfied with their relations with the friendly societies, of which there are thirty-eight in the town attended by fourteen medical men. They recently issued a circular stating that unless fresh arrangements were made their contracts with the societies would come to an end. The principal changes asked for were a higher scale of payments and a wage limit. Both changes have been refused and the medical men have sent in their resignations, which will take effect in a month or two. In order to prevent any suffering to the poor the medical men are considering the question of starting a medical dispensary, at which advice and medicine should be obtained almost gratis, each case being considered on its merits. The societies propose to engage a medical man to attend to them solely. He will receive a salary and be bound not to practise outside the limits of the societies.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Manchester and the Joint Committee.

THE ever-recurring question as to the share Manchester takes in the pollution of the Irwell, and consequently in that of the Ship Canal, has entered on another phase. At a meeting of the Mersey and Irwell Joint Committee on May 5th the consideration of the position of the corporation was adjourned for two months to enable them to determine whether or not they would carry out the scheme for the filtration of the sewage which had been laid before the joint committee or what further measures would be adopted by them, and they were requested to report to the committee at the earliest possible date. On May 7th the special sub-committee of the corporation instructed the city surveyor to prepare plans and estimates for filtration works as indicated in Sir H. Roscoe's report. The result of trial holes on the proposed site was "very unsatisfactory," and the city surveyor was further instructed "to report generally upon the whole matter." In a letter from the town clerk to the joint committee, received on June 30th, it is said that the sub-committee felt that a "question of this magnitude" could not be hurried, and further time was asked for the preparation and consideration of plans, estimates, and report. The chief inspector of the joint committee reported that 10,000,000 gallons of sewage were poured into the river untreated. After careful consideration the consulting sub-committee recommended that proceedings be now taken against the corporation. Mr. Killick said the effect of figures which had been prepared seemed to be that Manchester was effectively treating one-sixth of her sewage. The committee had been in existence for five years, and he thought the time had come when every authority should be efficiently treating its sewage or have works in course of construction. He stated also that he and the surveyor could endorse the complaints made in letters from the Ship Canal Company and the Corporation of Eccles and from others complaining of the stench, and also as to the amount of solid matters brought by the rivers into the docks. He moved that proceedings should be taken. This was seconded by Mr. V. K. Armitage. Mr. Alderman Hopkinson and Mr. Alderman Joseph Thompson complained of a want of friendly feeling shown towards the Manchester Corporation, and said that the work was proceeding as rapidly as possible. All animus against the corporation was disclaimed, but, as was stated, the matter was urgent. The Chairman, Sir J. T. Hibbert, said all must admit that "Manchester had shown *bonâ-fides* in the matter, but in view of all the facts he felt that the sub-committee were justified in using pressure towards the corporation." The resolution was carried, the representatives of Manchester not voting. Some time ago the water of the canal had improved, and Alderman Hopkinson said that fish had come up to Latchford. The dry season, however, and the great heat we have had from time to time, have brought out all the possibilities of stench that for a while lay dormant in its filthy depths. Far away down the canal, as at Lachford, the nuisance is at times almost unbearable. At one house, and no doubt at many others, at a considerable distance from the canal the dwellers therein are sometimes awakened from their sleep and in this hot weather have to shut all their windows. Time and more energetic action by the joint committee on those ponderous bodies, the corporations and the various "authorities," which are only moved with difficulty, will bring about an improvement, when perhaps life may be worth living near the Ship Canal. All this trouble and the expenditure of the enormous sums of money required to put things right only show the unspeakable folly of the nation in allowing the gradual growth of river pollution until it has become an evil so gigantic as to be almost unmanageable.

The Prestwich Union and Vaccination.

At the last meeting of the Prestwich Board it was moved by Mr. Husband, L.R.C.P. Lond., M.R.C.S. Eng.: "That in the opinion of this board it is very desirable that institutions for providing calf lymph for the purposes of vaccination from the calf should be provided in all large towns; they believe that if this were done, and the public encouraged to be vaccinated from the calf, the great objection to vaccination would be overcome." One guardian opposed it, "believing that it was useless, inasmuch as the Local Government Board were opposed to vaccination with calf lymph." In the end the motion was unanimously adopted.

Manchester Jewish Board of Guardians.

The twenty-ninth annual meeting of this board was held the other day. It is a voluntary association for the relief of the Jewish poor carried on—to their great credit—by their more prosperous co-religionists. In their report the guardians congratulated the subscribers on a substantial diminution of poverty, though the increase of school accommodation required and of places of worship pointed to a sensible addition to the Jewish inhabitants of the city. It was satisfactory also that the local authorities were beginning to recognise substantially the work of the board in reducing the rates of the city, grants in aid of the funds having been made by the Manchester, Salford, and Prestwich boards of guardians. From a sanitary point of view the most interesting statement was made by Mr. Henriques, who said that the health of the Jewish poor compared favourably with that of their neighbours, although large numbers of them were steeped in

poverty. "They attributed that to their dietary laws, the help afforded by that institution and its medical officer, and the care which Jewish women took of their children." It may be remembered that Dr. Niven recently drew attention to the low death-rate of the Jews in Manchester.

North-Western Branch of the Society of Medical Officers of Health.

At a meeting held in Manchester on the 10th inst., Dr. Wm. Graham of Middleton was elected president, in succession to Mr. Vacher, medical officer to the Cheshire County Council; Dr. Robertson (St. Helens), Vice-president; Dr. Porter (Stockport), treasurer; and Dr. Wheatley (Blackburn), hon. secretary. An interesting paper on "The Ventilation of Sewers" was read by Dr. Marsden of Birkenhead.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The British Medical Association; Invitation to Edinburgh.

AT a special meeting of the Edinburgh Branch of the British Medical Association held on July 13th in Edinburgh in the Royal College of Physicians it was decided to invite the British Medical Association to hold its annual meeting in Edinburgh in 1897. A deputation was appointed to submit the invitation to the meeting in Carlisle. Professor Sir Thomas Grainger Stewart was recommended as president-elect.

The Edinburgh Obstetrical Society and Professional Confidences.

The Edinburgh Obstetrical Society held a special meeting last week at which it discussed the confidential relations subsisting between medical men and their patients. The discussion was suggested by the Playfair case. Mr. Taylor Innes, advocate, was present by special invitation and took part in the proceedings. It is, I think, unfortunate that no report was allowed to be taken of the proceedings, for many points of great importance to the profession and the public were touched upon or discussed. There are many delicate and difficult points connected with the subject that individual medical men would gladly have had an expression of opinion upon from leaders in the profession; while, even from the purely legal standpoint, many would have welcomed an exposition of Scottish law on various points, or an indication of how far the profession are legally bound to do certain things.

Additions to the Edinburgh Royal Infirmary.

The plans for the new laundry offices for the Royal Infirmary have been approved by the managers. The buildings are to be situated to the west of Lauriston-lane. The managers have also approved of the plans for the new medical pavilion. At the meeting on July 13th some discussion took place on the initiative of Dr. Batty Tuke, who made objections to the arrangements for a bathing department and also to the expense of introducing the electric light into the Infirmary. Both these matters were, however, agreed to. The bathing department is to be in the basement of the new medical pavilion and is to comprise a Turkish and Russian bath, douche rooms, &c.

Inverness Medical Society.

The summer meeting of this society was held at the District Asylum, Inverness, on July 11th, Dr. Macnee, the President, in the chair. After the minutes of the previous meeting had been read and approved, the secretary read his annual report in which it was mentioned that during the past session ten meetings were held and five new members elected. Several interesting and instructive papers were contributed by members. The club question came up for discussion at several meetings and the members were unanimous in refusing to undertake club work unless the scale of rates was in accordance with that suggested by the society. The clubs did not see their way to agree to this arrangement, and the medical officers resigned. The clubs in town joined together and advertised for a medical officer to undertake the work at their terms. Unfortunately for the credit of the profession a medical gentleman, Dr. Callender, formerly of Leeds, accepted the position, thus frustrating the efforts of the society in their endeavour to place the relations of the medical practitioners in Inverness and the clubs on a better financial basis than they had been hitherto. A donation of books from the library of the British Medical Association was announced. The office-bearers for the session 1896–7 were elected:—President: Dr. James Murray. Vice-Presidents: Dr. Mackenzie and Mr. MacFadyen. Honorary Secretary: Dr. J. Munro Moir. Dr. Keay, superintendent of the District Asylum, exhibited a series of interesting cases from the wards illustrating the different phases of insanity.

Aberdeen Royal Infirmary.

The medical and surgical staff have represented to the directors that the streets surrounding the infirmary buildings might be paved with some material which caused less noise than granite. It is believed the town council will probably give effect to this suggestion, at least as regards the carriage way of Woolmanhill. The matter is, however, only under consideration and no decision has been arrived at, but wood, asphalt, or tar macadam paving has been proposed as a substitute for granite causeway blocks.

University of Aberdeen.

It has been remitted to Mr. A. Marshall Mackenzie, A.R.S.A., architect, to report as to accommodating the natural history department in the proposed new south wing of the Marischal College buildings.

July 15th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Milk Adulteration in Dublin.

THE guardians of the south Dublin union and the corporation have recently instituted a series of prosecutions for food adulteration, more especially in regard to milk. Sir Charles Cameron gave some interesting evidence, and a number of well-deserved fines were inflicted. In one case the certificate stated that there was 16 per cent. of added water and 2 per cent. of starchy matter added in order to give the appearance of cream. Sir Charles Cameron stated that it was many years since he had met a case of adulteration by starch, that he had made a microscopical examination of the specimen, which would certainly be injurious to health if swallowed, and that the case was undoubtedly one of gross adulteration by starch. Mr. Rice, representing the corporation, said, in applying for an adjournment, that if Sir Charles Cameron's analysis be corroborated by the authorities at Somerset House he would ask that this case be dealt with under a section of the Act under which there is a fine of £50 for the first offence and six months' imprisonment for the second. The case was accordingly adjourned.

Proposed Isolation Hospital for Scarlet Fever.

A meeting of the special committee, consisting of the representatives of the boards of the north and south Dublin unions, was held on the 13th inst. for the purpose of making arrangements with regard to the provision of hospital accommodation for scarlet fever and other infectious diseases. The meeting had under consideration proposals for the purchase of land on which to build an isolation hospital and also examined various offers which were brought before them of existing premises which might prove useful for hospital purposes. A site on the Crumlin road was specially considered and thought worthy of investigation and the presentation of a report to the next meeting. The master was, moreover, directed to make inquiry in reference to fee-simple property for sale in the neighbourhood of the city, and the clerk instructed to advertise at once for a large house with land situated within one mile of the city and suitable for the purposes of a temporary hospital. The epidemic seems now to be rather on the decline, but its history shows that there is urgent necessity for better arrangements than at present exist for the treatment of such an unwelcome visitor. Since Jan. 1st of this year and up to the end of the second week of this month there have been registered in the city 734 cases of scarlet fever with 45 deaths.

The Ulster Medical Society.

The annual meeting of the Ulster Medical Society was held in Belfast on July 9th, Professor Sinclair, the President, in the chair. The reports submitted by the secretary and the treasurer showed that the condition of the society is at present most satisfactory, there being 130 members and a

good balance in hand. A long discussion took place in reference to the question of rooms for the society's meetings and library, when it was decided to leave the present place, and a subcommittee was appointed to look out for, and to select, new rooms so as to have them ready for next session. The following office-bearers were then appointed for the session 1896 97: President, Professor Symington; vice-presidents, Dr. Kevin and Dr. Calwell; secretary, Dr. McKisack; treasurer, Dr. McCaw; pathological secretaries, Dr. Lorrain Smith and Dr. Lynass; librarian, Dr. Shaw; council, Dr. Lindsay, Dr. Campbell, Dr. Dempsey, Dr. Gaussen, Dr. Bingham, and Professor Byers.

Londonderry Lunatic Asylum.

At a meeting of the board of governors held on July 9th a resolution was unanimously passed "that the attention of the board of control be specially drawn to the overcrowding of the asylum on the male side and to the necessity that now exists that an immediate remedy be provided by the governors." It was reported by Dr. Hetherington, the resident medical superintendent, that excessive crowding exists on the male side owing to the large number of admissions, and of late the cases admitted have been of an unpromising nature as regards recovery or discharge. Sir H. Bruce, who presided, gave notice, as an endeavour on his part to save a large expenditure, that at their next meeting the governors should consider the advisability of acquiring the grounds and buildings of Foyle College if they are for sale. The governors think the board of control are very dilatory in reference to the proposed new asylum, and the conference between them and the governors which was to have taken place on July 9th was postponed by the former not being able to attend owing to "circumstances having arisen." This refers to the difficulty the Government find themselves in owing to the strong opposition to the new asylum scheme which has sprung up all over County Derry. In reply to Sir Thomas Lea (member for the Southern Division of County Derry), who asked the Chief Secretary for Ireland if he would consent to receive a deputation from the Grand Jury and representatives of the ratepayers of the county of Londonderry in reference to the building of this new asylum, Mr. Gerald Balfour stated on July 9th that the whole matter was receiving the further consideration of the Government, and that before any further steps were taken towards passing an order in Council, a communication would be made to the gentlemen who desired to form the deputation. On July 13th a meeting was held in Limavady to protest against the heavy taxation likely to be imposed upon the county by the proposal to build a new lunatic asylum. Stress was laid by the speakers on the fact that at present great agricultural depression made it impossible for farmers to be saddled with more taxation, and it was suggested that portions of the Coleraine and Limavady workhouses could be set apart for the housing of the more harmless lunatics. The meeting also approved of the suggestion of Sir H. Bruce, to purchase Foyle College and grounds, as this plan would render unnecessary a new asylum.

Ulster Eye, Ear, and Throat Hospital.

At a meeting of the committee of this hospital held on July 10th it was reported that the intern department was so filled that it was necessary to put up stretcher beds for accommodation of the patients. As the additional part of the hospital is now in course of erection, it was decided that another storey be added to it to provide further room for the large number of intern cases. The committee feel that in a short time even a further extension will be necessary, for which two methods are available—either adding a fourth storey to the old hospital or building a wing behind.

Cork District Lunatic Asylum: Important Report by an Inspector of Asylums.

An inmate of the Cork Lunatic Asylum committed suicide on the 24th ult. by suspending himself by means of a necktie from a hook connected with one of the pipes of a urinal. An inquest was duly held, but it was considered desirable that Dr. O'Farrell, inspector of asylums, should investigate all the circumstances of the case. As the result of his inquiries Dr. O'Farrell has furnished the board of governors with a very able and exhaustive report, in which he points out that the patient had exhibited active suicidal tendencies and that the structural and nursing arrangements at Cork did not permit of the proper amount of supervision being given to such cases.

July 14th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The German Practitioners' Association.

THE twenty-fourth annual meeting of the German Practitioners' Association ("Deutscher Aerztetag") was held in Nuremberg, Dr. Aub (Munich) being in the chair. An account of the objects and constitution of the association was given in THE LANCET of July 13th, 1895, p. 127. After the introductory business was disposed of motions of the Berlin and Frankfurt branches concerning certain alterations of the by-laws were considered but did not meet with approval. The next subject of discussion was the question of the courts of honour, which are already at work in the kingdom of Saxony and will probably be very soon established by law in the kingdom of Prussia. The speakers complained that the civil and military medical officers are specially exempt from the jurisdiction of these courts, but they are nevertheless eligible as members of the provincial medical boards (Aerztekammer), and thus may become judges in these courts. The interference of the administrative element was another grievance. The delegates of the Breslau branch proposed that a code of ethics should be published previously to the formation of the courts, but this motion was rejected. The following resolution was then carried: That this meeting approves generally of the new law concerning medical etiquette, that alterations of some articles are advisable, that the law is for the most part in accordance with the wishes expressed at the last meeting of the association, and that it ought to be universally introduced throughout the empire. The "free choice system" in connexion with the workmen's sick clubs was then discussed, the subject being introduced by Professor Eulenburg, editor of the *Deutsche Medicinische Wochenschrift*. Membership of a sick club is, as readers of THE LANCET may recollect,[1] compulsory on the working class of this country, and a number of medical men have been appointed as medical officers to them at fixed rates of remuneration. This concentration of club practice in the hands of a few has naturally evoked protests, and alterations have been suggested principally by an association of junior practitioners who induced the clubs not to employ specially appointed medical officers, but to allow their members to be attended by any practitioner who was willing to accept the club terms. This system, called the "free choice system," has been in force in Leipzig and other towns for several years and was introduced into Berlin as well, but obstacles were thrown in the way by the local authorities and the Prussian Government. The clubs are in fact under the control of the various municipalities, which according to the German workmen's insurance laws must aid them financially if they become unable to provide for their members as ordained by the law. The free choice system was accordingly prohibited in Berlin and some other towns on the ground that experience had shown it to be costly, and a so-called mixed system was recommended. Professor Eulenburg refuted the arguments which had been directed against the free choice system and pointed out that the recent measures of the government were at variance with the right of combination granted by the constitution to the inhabitants of the country. Dr. Windels said that this was a local question affecting Berlin only and therefore unsuitable for discussion in the general meeting. Dr. Mugdan, president of the Free Choice Society of Berlin, replied that a club could never be ruined by the expense of medical attendance; the financial position of these clubs being entirely dependent on the general condition of the working class, scarcity of employment usually has an unfavourable influence on their affairs. Dr. Peck explained that the system prohibited in Berlin has been in full action in Nuremberg for several years, to the general satisfaction of the workmen, as well as of the medical profession. The meeting then signified its formal approval of the free choice system, just as on the occasion of the meeting at Eisenach in 1895, and pledged itself to oppose any measure prejudicial thereto. A short debate then took place on certificates given by certain medical men to dealers in pharmaceutical preparations, foods for invalids, and other commercial products, and the meeting expressed the view that medical opinions on drugs, &c., ought to be given in the interest of science only, and never for the purpose of advertisement. A somewhat peculiar

[1] THE LANCET, Feb. 2nd, 1895, p. 317, and July 13th, 1895, p. 127.

affair which happened some time ago in the Augusta Hospital in Berlin then came on for consideration. A high personage about the court, one of the adjutants of the Emperor, was under treatment in this hospital for myelitis, and when the physicians had told his family that the case left little room for hope recourse was had to an unqualified practitioner, who promised to cure him within a short time. The physicians hearing of this declined to see the patient again, but he was nevertheless allowed by the board of management to be regularly attended in the hospital by the practitioner in question, who lived in Dresden and on returning there received the officer into his house as a resident patient. The Augusta Hospital is under the patronage of the Empress, and it was said that her majesty had recommended the family to call in this particular adviser. The medical profession was astonished when these unusual proceedings were reported first by the lay and then by the medical press, and an animated discussion in the newspapers ensued. The *Deutsche Medicinische Wochenschrift* strongly urged the physicians of the hospital to resign their appointments. In the present meeting Dr. Heinze was deputed by the physicians to declare that they believed they had done all that could be expected of them when they declined to visit the patient, and that they are not empowered to order the discharge of a patient whom the board of management had expressly permitted to remain in the hospital. The remainder of the business was of minor interest, and the proceedings then terminated. Dr. Aub (Munich) was re-elected President and Dr. Lubker (Bochum) Vice-president of the association.

Alleged Asiatic Cholera in Dantzig.

A telegram from Dantzig in Western Prussia announced the other day that a case of cholera had occurred in that town, and an official notification to the same effect was made by the mayor conformably to the cholera regulations. As Dantzig is a busy seaport town on the Baltic its prosperity would be seriously affected by the outbreak of an epidemic, and the inhabitants were much relieved when it appeared that the local marine officer of health had erred in assuming the presence of cholera. Cultures of bacteria from the dejecta were sent to the Imperial Health Office and the Institution for Infectious Diseases, and were found to contain not comma-bacilli but Finkler-Prior bacilli. The patient is already in the stage of convalescence.

July 15th.

ROME.

(FROM OUR OWN CORRESPONDENT.)

Professor Maragliano and his Critics.

WINDING up his summer course in the medical clinique of the University of Genoa, Professor Maragliano addressed a few words to his audience of undergraduates and post-graduates "Sui Progressi della Sieroterapia nella Tisi" (on the Advances of Sero-therapeutics in Phthisis Pulmonalis). The clinically observed and officially certified cases of consumptive patients treated by his method now number six hundred, ample enough for a working estimate to be formed as to the efficacy of that method in graver cases on the one hand, and less serious ones on the other. "As the anti-diphtheritic serum," said Professor Maragliano, "does not cure all diphtheritic patients, so the anti-tuberculous serum will certainly not succeed in all cases of tuberculosis indiscriminately. There will always be a margin of failures sufficient for the objections of that school of critics who, instead of analysing the findings of the laboratories, physiological and pathological, with the noble purpose of illustrating the truth, examine the work of others with the sole object of discrediting it (*esaminano l'opera altrui al solo scopo di screditarlo*)—not to see what elements of truth it contains, but to detect how far the grounds of suspicion predominate." These words, with an oblique reference to the criticisms of his own compatriots, not a few of whom belong to the South Italian schools, found a sympathetic response in his audience, satisfied that Professor Maragliano's method has not only entitled itself to a fair trial but has even vindicated its claim to recognition in practice. Sero-therapy in phthisis, Professor Maragliano and his disciples maintain, has established the same rights of medical citizenship (*gli stessi diritti di cittadinanza*) as sero-therapy in diphtheria. This position is becoming less and less contested even in Italy, and boldly challenges confirmation from abroad—"the judgment of foreigners being," in Madame de Stael's phrase, "that of a contemporaneous posterity."

Medical Prisoners of War.

The melancholy fate of the philanthropic priest, Count Wersowitz-Rey, head of the mission for rescuing the Italian prisoners of war in Abyssinia,[1] has deepened the interest in those numerous victims to that ill-starred campaign. The padre died from sunstroke on the first stage of his journey inland, and now another of his companions, the Padre Oscar, has also succumbed to insolation on the same route. The mission, nobly supported by the Contessa Santa Fiora, is being prosecuted by a survivor, Monsignor Macario, and its results will be awaited with profound and far-spread anxiety. Meanwhile, among the prisoners, those belonging to the Army Medical Staff arouse special sympathy. Take, for instance, Lieutenant Giulio Nardini, M.D., who is one of the two officers, combatant and medical, who out of eighteen attached to the 9th battalion alone survive. A Tuscan by birth and a distinguished student at Florence and at Pisa, where he graduated with poor Jacopetti,[2] who met a hero's death at Amba Alagi, young Nardini, by his gratuitous and able services in the cholera epidemic at Ferrara, so impressed the medico-military department that by special favour he was allowed to join the auxiliary forces which sailed for the seat of war from Naples in December last. Nothing could have been more exemplary than his conduct all through the evolutions which terminated so disastrously at Abba Carima—his endurance of fatigue, of privations, and of exposure under fire, in relieving the sick and wounded. His professional skill indeed and devotion included the invalid or wounded Abyssinian as well as Italian; but he was taken prisoner after fruitlessly courting death, and now shares the durance vile of the humblest linesman who fell into the semi-savage victor's hands. Without in the smallest degree restricting or invidiously limiting the errand of release or rescue on which the Wersowitz mission is bound, it is felt that some distinction should be made between the medical and the combatant prisoners—those who, like Nardini, were present on the battlefield to devote their humane efforts for the fallen of either side and those whose function it was simply to swell the tale of killed and wounded among the enemy. A heavy money ransom, it is said, will be exacted by King Menelik from Italy, who is in no position to pay immediately, if at all, the 36,000,000 lire reported as the victor's claim. If the Wersowitz mission, by persuading King Menelik that the medical prisoners stand on a quite different footing from the combatants, can secure their more speedy restoration to professional duty it will have achieved a memorable triumph, not only in its immediate consequences, but in its ulterior results on the vicissitudes of African warfare.

"*Ospizi Climatici.*"

The earnestness with which, in these columns, the institution of climatic health resorts has been insisted on[3] begins to bear fruit. A commencement has been made on the Alban Hills at Rocca di Papa, 750 metres above sea level, remote from all malarious influence even in autumn. There, at the instance among others of the Commendatore Lapponi, body physician to His Holiness Pope Leo XIII., a climatic station has, since the 1st inst., received twenty invalid children belonging to the poorer classes. Further relays of similar necessitous sufferers will follow, while additional climatic stations are in course of erection for inmates belonging to the same category. The ground thus auspiciously broken will, let us hope, be cultivated for the benefit of other patients—the well-to-do foreigners, to wit, who, in convalescence from illness contracted in Rome, are placed at serious disadvantage for want of a suitably appointed sanatorium within easy distance by rail. Rocca di Papa, or rather Hannibal's Camp above and behind it, has long been designed for the purpose by the English-speaking practitioners in the Eternal City. The Commendatore Dr. Lapponi, and his colleagues on the committee for "Ospizi Climatici," would perform a service more than patriotic—international, indeed, in the best sense—if they would provide for the convalescents aforesaid the benefits of change of scene and air now so liberally vouchsafed to the young invalid population of Rome.

July 10th.

[1] Vide THE LANCET, May 30th, 1896.
[2] Vide THE LANCET, Jan. 4th, 1896.
[3] Vide, inter alia, THE LANCET, Sept. 14th, 1895.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Septic Peritonitis arising several months after Bassini's Operation.

AT a recent meeting of the Hospital Association Dr. Pertik, Professor of Pathological Anatomy, read an instructive paper on two cases of Septic Peritonitis which followed Bassini's operation for hernia. In the first case three or four weeks, and in the second case several months, had elapsed since the operation. The special interest of the paper lies in the fact that Professor Pertik could anatomatically trace the mischief in both cases to the preceding operation. He found that the adhesions which had formed in connexion with the operative interference led to a partial necrosis of the vermiform appendix, which on its part produced the peritonitis.

A Case of Pseudo-fractura Penis.

Dr. Bakó exhibited a case of Pseudo-fractura Penis at a meeting of the Hospital Association. The patient, a man aged forty-seven years, suddenly felt during coition a painful crack in his penis. According to his statement the penis presented after that a large swelling and turned nearly entirely black. Dr. Bakó when consulted on the next morning found a subcutaneous hæmorrhage extending along the whole inferior portion of the penis and involving also the upper part of the skin of the scrotum. A hard infiltration the size of an almond could be felt in the left corpus cavernosum. He employed scarifications, which were followed by a gradual decrease of the swelling, and twelve days later the patient had a completely painless erection.

The Hygienic Department of the Millennium Exhibition.

A group of four pavilions serves to show the development of Hungary from a hygienic point of view. The first contains matters concerning hygiene *sensu strictiori*. I noticed an interesting table showing graphically the spread of various infectious diseases in this country from 1863 up to the current year. Cholera had reached its acme in 1866; the subsequent epidemics of 1873, 1836, 1892, and 1893 show a steady decline. The mortality from diphtheria was highest in 1891, whereas the statistics of the last four years present a gradual amelioration. Further, in this pavilion there were skilfully prepared models of various hospitals and exhibits of the sanitary arrangements of the Hungarian Red Cross Society, of the Budapest Street Ambulance, and of the sanitary service of the Hungarian State Railways. The waggons constructed to effect the transport of the wounded in cases of railway disaster deserve special attention. Last, but not least, I should mention a very fine series of Roentgen radiographs obtained by Dr. Kiss with his special "Millennium lamp," showing not only the skeleton and the muscles of the body but giving also beautifully the contours of some internal organs, such as the heart, liver, &c. The second pavilion shows the state of child-nursing. The questions of the artificial feeding of infants, the vaccination of children, and the different methods of obtaining vaccine lymph are all very carefully dealt with. The models of various hospitals for children show that their arrangements are quite up to date. I think a little more attention might have been paid to the amusements of children, showing the different easy modes of entertainment in the open air. The third pavilion contains panoramas of various Hungarian watering- and bathing-places, such as Herkulesfürdö, Marillavölgy, Tatrafüred, &c., and a collection of different Hungarian natural mineral waters. I hope this part of the exhibition will help to concentrate a larger amount of attention on Hungary's beautiful but hitherto not well-known health resorts. The fourth pavilion is occupied by a section of the Budapest Ambulance Society. This popular institution, which is one of the best of its kind, has given assistance on the grounds of the exhibition in 720 cases during the last six months. I am obliged to my friend Dr. G. Fiaika, of the hygienic department of the exhibition, for showing me round and giving me full particulars.

Honours to Medical Men in Hungary.

Professor G. Mihalkovics of the Budapest University, and Professor J. Brandt of the Kolozsvar University, have received the Order of the Iron Crown, which is a well-deserved distinction in recognition of the merits of these two hard-working scholars. High honours have also been conferred upon Dr. L. Csatary, who has been appointed Ministry-Councillor. Further, Dr. L. Farkas and Dr. A. Jatay have each received the title of Royal Councillor.

Royal Princes as Honorary Doctors of the Budapest University.

Among those men of science who have received on the occasion of the Millennium the title of Honorary Doctor I notice Prince Louis Theodor, the eminent Bavarian ophthalmologist, and the Archduke Joseph. Upon the former was bestowed the Hungarian M.D. for his excellent medical work; whilst the latter received the degree of Ph.D. for his contributions to our knowledge of the gipsy language. The richly ornamented and illuminated diplomas will be presented to them by a special deputation of the University.

July 6th.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS AND SURGEONS.—The following gentlemen passed the Second Examination of the Board in the subjects indicated:—

Wednesday, July 8th:

Anatomy and Physiology.—John Atkins, Thomas James Wright, Edwin John Tongue, Walter Graham Stewart, Charles Harold Brangwin, Cyril James Hewlett, and John Dell Bridger, Guy's Hospital; Henry Zouch Stephens, Guy Black, Noel Unsworth, and Gerald Woodforde Harrison, St. Thomas's Hospital; Cecil Powell, St. Thomas's Hospital and Cambridge University; Charles Bertrand Wagstaff and Sydney William Garne, Charing-cross Hospital; Dodington George Richard Shurston Baker, Charles Maxwell Ekins, William Boxer Mayne, and Harold Selwyn Capper, University College, London; Frederick Charles Borrow, Charles Vivian Cornish, and Percy Tatchel, St. Bartholomew's Hospital; Elfred Chalmers Austin, St. Mary's Hospital; Gilbert Edgar Cope, Westminster Hospital; and John Evans, Cambridge University and St. George's Hospital.

Physiology only.—Henry Augustus Ahrens, King's College, London; and Thomas Morgan, Guy's Hospital.

Ten gentlemen were referred in both subjects, and two in Anatomy only.

Thursday, July 9th:

Passed in Anatomy and Physiology.—Francis Henry Sprague, Alexander Frecar, Henry Christopher Tayler, and Thomas Hedley Vickers, St. Mary's Hospital; Herbert Stanley Greaves, and John Dawson Hartley, St. Bartholomew's Hospital; David Sydney Graves, Herbert Reginald Harry Denny, and Edward Warren Hine Shenton, Guy's Hospital; Arthur Robert George Pocock, and John Cunningham Bell, University College, London; Cuthbert Blundell Moss-Blundell, St. Thomas's Hospital; and William Panckridge-Panckridge, Middlesex Hospital.

Twenty-three gentlemen were referred in both subjects, and one in anatomy only.

Friday, July 10th:

Anatomy and Physiology.—Sheffield Neave, James John Sheat Scrase, and Arthur Herbert Hayes, St. Bartholomew's Hospital; John William Hunt, William Arthur Trumper, and Basil Hubert Howard Tripp, St. Mary's Hospital; Ernest Fitzgerald Ellis, Gerard Andrews Herklots, Walter Dick, and Charles Herbert Wood, University College, London; William Wilfrid Halsted, St. Thomas's Hospital; Ernest John Reeve Bartlett, King's College, London; Charles Antony Lower, Guy's Hospital and Mr. Cooke's School of Anatomy and Physiology; and Gerald Meade Eastment, Middlesex Hospital.

Twenty-two gentlemen were referred in both subjects.

Saturday, July 11th:

Anatomy and Physiology.—Francis Reinagle Barwell, University College, London; William Bertram Watson, Harold Rothery Nutt, William Ernest Gribbell, and Gerald Denton Winston, St. Mary's Hospital; Norman Routh Phillips, Percy Ryall Blake, and Edward Aleck le Maistre, London Hospital; Sidney d'Alton Corbett, St. George's Hospital; and William Henry Harland, Middlesex Hospital.

Anatomy only.—John Alfred Mellish, St. George's Hospital; and William Ernest Nelson, Cambridge University and St. Thomas's Hospital.

Physiology only.—John Henry Tripe, London Hospital; Arthur Hunt Safford, King's College, London; and Stephen Joseph Welch, London Hospital.

Thirteen candidates were referred in both subjects, two in anatomy only, and one in physiology only.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The following gentlemen having passed the necessary examinations and having now conformed to the by-laws and regulations, were at the quarterly meeting of the Council on the 9th inst. admitted Fellows of the College:—

Templeton, George, M.B., C.M. Edin., L.R.C.P. Lond., Edinburgh University and London Hospital; Membership dated Aug. 1st, 1893.

Richardson, Sidney William Franklin, M.B., B.S. Lond., L.R.C.P. Lond., St. Thomas's Hospital; Membership dated July 27th, 1893.

CONJOINT EXAMINATIONS BY THE ROYAL COLLEGE OF PHYSICIANS AND THE ROYAL COLLEGE OF SURGEONS IN IRELAND.—The following gentleman has passed for the Conjoint Diploma in State Medicine:—

James H. Fergusson, F.R.C.S. Irel., L.R.C.P. Edin.

MR. FRANCIS VACHER, F.R.C.S. Edin., has been installed as President of the North-Western Sanitary Inspectors' Association. The ceremony, which took place on July 11th at the Royal Institution, Colynitt-street, Liverpool, was followed by a conversazione.

THE annual speech-day will be observed at Brighton College on July 28th, when Sir John Lubbock will distribute the prizes. The proceedings will commence at 11 30 A.M. with a service in the college chapel, after which a tablet to the memory of Dr. Griffith, formerly head master, is to be unveiled.

ELECTION OF CORONER.—We understand that in consequence of the death of Mr. J. M. Jennings of Driffield, the office of Coroner for Buckrose (East Riding, Yorkshire) is rendered vacant. Mr. Henry Mainwaring Holt, M.R.C.S. Eng., L.S.A., D.P.H., of Norton, is a candidate for the office, and should be able to reckon upon substantial support. Wherever medical coroners have obtained a footing their career has been so thoroughly good that the chance of a steady increase in their number is great. We wish Mr. Holt all success.

PRESENTATIONS TO MEDICAL PRACTITIONERS.—Mr. Geo. H. Salter, L.R.C.P. Edin., M.R.C.S. Eng., of Ballarat, Victoria, Australia, having completed his term of office as resident surgeon at the Ballarat Dispensary Hospital, was entertained by the committee of management on April 13th last, and at the same time was the recipient of a presentation from the committee, officers, and nursing staff.—Dr. Thomas A. Chapman of Hereford, on retiring from the post of medical superintendent of the County and City Lunatic Asylum of Hereford, has received a presentation from the attendants and others connected with the institution.—At a concert held at the St. Luke's Institute, Bromley, Kent, on the 3rd inst., Viscount Knutsford, on behalf of the ambulance classes, presented Mr. J. H. Yolland, of Bromley, with a handsome revolving chair for his appreciated services as lecturer on first aid. On a silver plate affixed to the chair was inscribed: "Presented to J. H. Yolland, Esq., M.R.C.S., by the Ambulance Classes, July, 1896, Bromley, Kent."

CHARING-CROSS HOSPITAL MEDICAL SCHOOL.—The presentation of scholarships, medals, prizes, and certificates to the successful students of the school took place on July 14th, when the Hon. Mr. Justice Vaughan Williams occupied the chair. The Dean (Dr. Montague Murray) in his report, after referring briefly to the changes in the teaching staff of the school and hospital, went on to say that the recent death of Professor Huxley had served to remind them that they had been somewhat behind in acknowledging by suitable memorials their relation to some of their most distinguished students of past years. By means, however, of a re-arrangement of existing scholarships and by the establishment of a special fund they had been enabled to found memorials to Dr. Livingstone and Professor Huxley, both old students of the school. The memorial to Livingstone takes the form of an entrance scholarship of 100 guineas per annum and that to Huxley of (1) an entrance scholarship of £55 open to the sons of medical men; (2) a second year's prize in anatomy and physiology; and (3) a lectureship dealing with recent advances in science and their bearing on medicine and surgery. The first of these Huxley lectures will be delivered in the anatomical theatre on Monday, Oct. 5th, by Dr. Michael Foster, Professor of Physiology in the University of Cambridge and Secretary of the Royal Society. Mr. Justice Vaughan Williams congratulated the school upon its successes, and remarked that there was a considerable affinity between law and medicine, as both professions required from their members the exercise of very good discretion and were the recipients of confidences which he supposed no one would like to entrust to anybody except to his doctor or to his lawyer. At no time, he continued, were medical opinions considered so safe a guide as they were now in the administration of justice. The proceedings terminated on the motion of Sir Joseph Fayrer according a vote of thanks to Mr. Justice Vaughan Williams for presiding.

ON Wednesday last, at the Stamford-bridge Grounds, the United Hospitals Athletic Club were successful in their contest with the London Athletic Club, the hospital men winning the half-mile, the 100 yards race, the broad jump, the 220 yards race, the quarter-mile race, and the three mile race. Putting the weight, the one mile race, the 120 yards hurdle race, and throwing the hammer, fell to members of the London Athletic Club, while the result of the high jump was a tie.

SOCIETY FOR RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN.—The court of directors of the society held their quarterly meeting on July 8th, the President, Sir James Paget, being in the chair. It was resolved to distribute £1256 among fifty-three widows, twelve orphans asking for grants, and the five recipients of the Copeland Fund. The expenses of the quarter were £45. Two new members were elected and the deaths of two were reported. A fresh application for a grant from the Copeland Fund was considered, and assistance was given. A further sum of £928 4*s.* 7*d.* had been received from the executors of Miss Emma Carpue, making a total of over £4000.

DIPHTHERIA IN LONDON.—The week ended July 4th witnessed a rise in the number of deaths registered in London from diphtheria as compared with the totals of the preceding two weeks—namely, 43, as against 40 and 37 respectively. Moreover the number exceeded the corrected weekly average for the twenty-seventh week of the decennial period, 1886-95, by 10 deaths. As many as 9 belonged to Islington, and 4 each to Hackney, Battersea, and Camberwell sanitary areas. The ages of the deceased were much the same as has now become usual to expect, only one death taking place under one year of age and only one at an age over twenty years. In Greater London there were 9 deaths registered from the disease, 4 of these occurring in the Edmonton Union. The admissions to hospital were 103, as compared with 109, 91, and 112 in the preceding three weeks respectively. The number remaining under treatment in hospital at the close of the week was 760, a further rise on previous weeks. Last week there was still another rise in the total of deaths, 47 having been registered, and the corrected average for the twenty-eighth week of the last decennial period exceeded by 14. The deaths of patients belonging to Islington fell from the 9 of the preceding week to 5, and 4 were credited to Lambeth, 3 b[illegible]g credited to Shoreditch, Poplar, Bermondsey, and Greenwich sanitary areas respectively. The admissions to hospital in the week were 97, and the patients remaining under treatment numbered 758. Three deaths occurred in the first year of life, and the rest in persons under twenty years of age. The deaths also showed increase in Greater London, 13 being chronicled in the suburban areas, of which 4 were in the West Ham district.

LONDON HOSPITAL MEDICAL COLLEGE.—On July 13th the prizes and certificates were distributed to the successful candidates of the Medical College of the London Hospital. The distribution was made by Mr. Albert Druce, the chairman of the College board. The following is the list of the scholarships and prizes awarded:—Entrance scholarships—Price Scholarship in Science: (£120), H. Balean. Science Scholarships: (£60), O. Eichholz; (£35) A. B. Soltan. Price Scholarship in Anatomy and Physiology: C. R. B. Wall. Buxton Scholarships in Arts: (£30), F. Challans; (£20) C. A. Marsh. Other scholarships and prizes—Clinical Medicine £20 Scholarship: A. B. Fry; honorary certificate, H. W. L. Barlow. Clinical Surgery £20 Scholarship: A. M. Barraclough and W. B. Dove, equal; honorary certificates, A. B. Fry and R. W. Wakefield. Clinical Obstetrics £20 Scholarship: A. M. Barraclough; honorary certificates, F. F. Ward and L. F. R. Hutchinson. Andrew Clark Prize (£26): F. F. Waldron; honorary certificate, H. Innes. Letheby Prizes in Chemistry, £20 prize: F. A. Johns; honorary certificates, A. Howard and H. D. Pollard. £10 Prize: O. Eichholz; honorary certificates, H. Balean, C. Parker, and F. Challans. Sutton Scholarship in Pathology (£20): A. B. Fry. Anatomy and Physiology £25 Scholarship: C. Pike; honorary certificates, W. R. Dunstan and G. H. Herbert. Anatomy and Biology £20 Scholarship: H. Balean and A. B. Soltan, equal; honorary certificates, O. Eichholz and F. Challans. Dressers' Prizes: £15 prize, A. F. Tredgold; £10 prizes, F. S. A. Berringer, E. Merry, and F. M. Morris; £7 10*s.* prizes, C. E. Goode and H. J. May. Practical Anatomy Prizes: H. Balean, F. M. Morris, C. Pike, and H. D. Pollard.

MEDICAL MAGISTRATE.—The name of Mr. Frederick William Newcombe, M.D., M.S. Durh, M.R.C.S. Eng., has been inserted in the Commission of the Peace for the County Borough of Gateshead.

IN MEMORIAM.—At a public meeting recently held at Hobart, Tasmania, it was decided to open a Fund for the purpose of erecting a memorial to the late Mr. F. C. Smart, F.R.C.S. Edin., of that city.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Marriage with a Deceased Wife's Sister.

THE Bill to legalise in this country marriage with a deceased wife's sister has passed through all its stages in the House of Lords and been sent down to the House of Commons, where, if for no other reason than the pressure of Government business, there is little chance of it passing.

The New Tuberculosis Commission.

The names of the gentlemen appointed to this Commission are Sir Herbert Maxwell, M.P. (chairman), Professor Browne, Dr. Thorne Thorne, Mr. Shirley Murphy, Mr. H. E. Clare (town clerk of Liverpool), Mr. T. C. Trench, and Mr. John Speir.

The London Water Question.

The Government have made it known that they do not intend to proceed further this session with the Bill for creating a new water authority for London and certain of the Home counties. The Bill was introduced some time ago in the House of Lords and passed through all its stages there, but since being brought down to the House of Commons it made no substantial progress. It is understood that the Government will make another attempt to deal with the question next session.

HOUSE OF COMMONS.

FRIDAY, JULY 10TH.

Anthrax among Wool-sorters.

Mr. Fortescue Flannery asked the Home Secretary whether his attention had been called to the recent large number of deaths from anthrax occurring in the West Riding of Yorkshire, and whether he would lay upon the table of the House a return showing the number of deaths from this cause since Jan. 1st, 1895; whether he was aware that there was a code of regulations agreed upon between most of the employers of the wool-sorters and the workmen themselves as necessary for the protection of the workmen, and that the provisions of this code were practically carried out by the majority of employers in the arrangement of their sorting rooms; and whether the Home Office would consider the advisability of forthwith declaring wool sorting a dangerous occupation, thus giving local inspectors power to take action where the proper recognised precautions were not observed.—Sir Matthew White Ridley replied that three deaths from anthrax were recorded in the West Riding of Yorkshire during 1895 and three more in the same district had come to his knowledge already during the present year. The conditions of work in those industries in which anthrax principally occurred had been under the consideration of one of the Committees on Dangerous Trades now sitting, and on a recommendation which they had made to him in view of the recent fatal cases, he proposed to certify the process of wool sorting as dangerous under Section 8 of the Act of 1891, and to take immediate steps to establish special rules which would follow with some modifications the voluntary rules to which the hon. member referred and which were already carried out by the majority of employers.

TUESDAY, JULY 14TH.

The Administration of Oaths.

Dr. Farquharson called the attention of the Home Secretary to a case where it was alleged that the chairman of a Bench of Justices refused to accept the evidence of an essential witness in an important case because he claimed to be sworn in the Scotch fashion instead of kissing the book.—Sir Matthew White Ridley said, in reply, that he had made inquiries into the matter and was informed that the report was incorrect. It seemed that the Clerk to the Justices was on the point of administering the oath to a witness in the case in the Scotch form when it appeared that the evidence which he was about to give was immaterial, and on an intimation from the justices that they regarded it in that light, the solicitor for the defence withdrew the witness. In no instance, he was informed, had the justices refused to administer the oath in the Scotch form.

Mortality on the Gold Coast.

Dr. Farquharson asked the Secretary of State for the Colonies whether his attention had been directed to the exceptionally heavy recent rate of mortality among European officials on the Gold Coast, and whether anything was being done, or could be done, to remedy this unsatisfactory state of matters.—Mr. Chamberlain: Yes; my attention has been directed to the exceptionally large number of deaths which occurred among the European residents, unofficial as well as official, in the early part of this year, and on March 11th I wrote to the Governor begging him to consider what further steps could be taken to improve the conditions of life on the Coast. It cannot be hoped that all the causes of malarial fever will be removed, but much has been and is still being done by the erection of new buildings in better situations and providing means of recreation to keep the European officers in good health, and attempts are being made by boring to obtain a supply of good water which will be of immense benefit to the whole community. The governor, Sir William Maxwell, is giving the most careful attention to the subject and will be supported by me in any improvements he may be able to introduce.

Street Collections in London.

Mr. Hogan asked the Secretary of State for the Home Department whether women who made collections for alleged charitable purposes in the streets of London on Saturdays were paid by commission on the amounts they collect, and whether, having regard to the dimensions that this practice had assumed of late and the peculiar liability of such a system of collection to abuse and imposition, he would call for police reports on the subject.—Sir Matthew White Ridley said, in reply, that he had no knowledge or means of knowledge as to the point raised in the first part of the question. It was obvious that the system of street collections might easily become a cause of annoyance or be taken advantage of for fraudulent purposes, and it was no doubt one that required watching. No complaints had, however, reached him as yet, and there was nothing at present before him on which he could ask the police to report.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week for publication in the next number.

BARKER, W. H., L.R.C.P. Edin., M.R.C.S. Eng., has been appointed Medical Superintendent of the Ballarat Lunatic Asylum, Victoria, Australia.

BASSETT, W. F., M.R.C.S. Eng., has been appointed Deputy Licensing Magistrate for the District of Bathurst, New South Wales.

BUTLER, G. H., L.R.C.P. Lond., M.R.C.S. Eng., has been appointed on the Court of Medical Examiners in Hobart, Tasmania.

CAMPBELL, HARRY, M.D. Lond., F.R.C.P., has been appointed Physician to the West End Hospital for Diseases of the Nervous System, Paralysis, and Epilepsy, Welbeck-street, London, W., vice W. Wallis Ord, resigned.

CHOWN, F., M.B. Lond., L.S.A., has been appointed Medical Officer for the Fourth Sanitary District of the Helston Union.

CLARK, H. COLBATCH, M.R.C.S., L.R.C.P., has been appointed Junior House Physician to the North-Eastern Hospital for Children, Hackney-road.

CONYOR, SAML., M.D., Ch.B. Irel., has been appointed a Public Vaccinator for Coleraine, Victoria, Australia.

COWEN, ALFRED, M.B., B.S. Melb., has been appointed Health Officer for Meredith Shire, Victoria, Australia.

DAVIS, HENRY J., M.A., M.B., B.C. Cantab., M.R.C.S., L.R.C.P. Lond., has been appointed House Physician to the West London Hospital.

EAMES, CHAS. W., L.R.C.P. Lond., M.R.C.S., has been appointed Assistant Medical Officer at the Workhouse by the Leeds Board of Guardians.

ELLACOMBE, GILBERT W., M.R.C.S., L.R.C.P., has been appointed House Surgeon to the West London Hospital.

FARRANT, M., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the Workhouse of the St. Thomas's Union.

FENTON, JAMES I., M.B., C.M. Edin., has been appointed Acting Public Vaccinator for Omeo, Victoria, Australia.

GOLDIE, J. D., M.B., C.M. Edin., has been appointed Junior House Surgeon to the West Ham Hospital.

GRAHAM, D. J., M.B., C.M. Edin., has been appointed Resident Medical Officer to Chalmers' Hospital, Edinburgh.

HUMPHRY, E., L.R.C.P. Lond., M.R.C.S. Eng., has been appointed Resident Medical Officer and Public Vaccinator for the Districts of Newcastle and Toodyay, Western Australia.

JOHNSTONE, W. H., L.R.C.P. Edin., has been appointed Public Vaccinator for Leigh Road, Victoria, Australia.

KINGDON, WILFRED R., M.B. Durh., has been appointed an Assistant Medical Officer at the City Asylum, Birmingham.

LEGGE, THOS. M., M.D., B.Ch. Oxon., D.P.H. Camb., has been appointed to the Professorship of Hygiene by the Council of Bedford College, London, for Women.

LITTLEWOOD, H., F.R.C.S., has been appointed Honorary Assistant Surgeon to the General Infirmary, Leeds.

MACGREGOR, P., L.R.C.P., L.R.C.S. Edin., has been appointed Deputy Medical Officer for the Paddock Sanitary District of the Huddersfield Union.

MACKENZIE, JOHN, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer to the Kirkby Urban District Council.

MARMION, HENRY, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Assistant Medical Officer to the New Infirmary, Isleworth, W.

MULLEN, W. L., M.D., Ch.B. Melb., has been appointed Medical Officer to the Sunbury Lunatic Asylum, Victoria, Australia.

MURRAY, J. H., M.B. Lond., M.R.C.S., L.R.C.P., has been appointed Assistant Medical Officer to the Borough Isolation Hospital, Bagthorpe, Nottingham.

REEKS, HENRY, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the Workhouse of the Steyning Union.

RENTZSCH, SIGISMUND HENRY, L.R.C.P. Lond., M.R.C.S. Eng., has been appointed Public Vaccinator for the Cheshunt District of the Edmonton Union.

RILEY, F., L.R.C.P. Lond., M.R.C.S., has been appointed a Public Vaccinator for the District of Winton, New Zealand.

SAUNDERS, BERTRAM, M.B., M.C. Aberd., has been appointed House Physician to the City of London Hospital for Diseases of the Chest, Victoria-park, E.

SAWSON, H. A., M.B., Ch.B. Melb., has been appointed Acting Medical Superintendent for the Beechworth Lunatic Asylum, Victoria, Australia.

STATTER, W. A., L.R.C.P., L.M. Edin., has been appointed Honorary Physician to the Wakefield Clayton Hospital.

THWAITES, J. S., M.B. Melb., has been appointed Public Vaccinator for Tallangatta, Victoria, Australia.

WHITAKER, G. H., L.R.C.P., L.R.C.S. Edin., has been re-appointed Medical Officer of Health by the Horwich Urban District Council.

WOOD, FRANCIS H., L.R.C.P., L.R.C.S. Edin., has been appointed Honorary Physician to the Wakefield Clayton Hospital.
WOOLLRIGHT, A. P., L.S.A. Lond., has been appointed Senior House Surgeon to the West Ham Hospital, vice Hillier, resigned.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

CENTRAL LONDON OPHTHALMIC HOSPITAL, 238, Gray's-Inn-road, W.C.—House Surgeon.
CHELSEA HOSPITAL FOR WOMEN, Fulham-road, London, S.W.—Clinical Assistants, for three months on payment of a fee of £5 5s.
CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria-park, E.—Resident Medical Officer. Salary £100 per annum, with board, &c.
DENBIGHSHIRE INFIRMARY, Denbigh.—House Surgeon for twelve months. Salary £30 per annum, with board, residence, and washing.
GENERAL HOSPITAL, Nottingham.—House Surgeon, for two years. Salary £100, rising £10 a year to £120.
GLASGOW SAMARITAN HOSPITAL FOR WOMEN, Victoria-road, Glasgow.—Resident (lady) Clinical Assistant.
HULL ROYAL INFIRMARY.—Four Honorary Assistant Surgeons for five years.
NORTH-WEST LONDON HOSPITAL, Kentish-town-road.—Assistant Resident Medical Officer. Also Assistant Surgeon.
NOTTINGHAM BOROUGH ASYLUM.—Second Assistant Medical Officer Unmarried. Salary £100 per annum, with apartments, board, washing, &c.
ROYAL NATIONAL HOSPITAL FOR CONSUMPTION, Ventnor, Isle of Wight.—Assistant Resident Medical Officer. Salary £70 per annum, with board and lodging in the hospital. Applications to the Board of Management, the London Office, 34, Craven-street, Charing-cross, London, W.C.
SUSSEX COUNTY HOSPITAL, Brighton.—Fourth Resident Medical Officer. Salary not exceeding £30 per annum, with board, washing, and residence in the hospital.
THROAT HOSPITAL, Golden-square, London, W. — Junior Clinical Assistants.
WANDSWORTH AND CLAPHAM UNION.—District Medical Officer for the No. 2 District of the Parish of Streatham. Salary £60 per annum, with certain fees in addition. Applications to the Clerk, Union Offices, St. John's-hill, S.W.
WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL, Wolverhampton.—Resident Assistant for six months. Board, lodging, and washing provided.

Births, Marriages, and Deaths.

BIRTHS.

COX.—On July 8th, at Sheffield-gardens, Kensington, the wife of William Spencer Cox, M.R.C.S., of a son.
HINGSTON.—On July 6th, at Rose Dean, Liskeard, Cornwall, the wife of Richard Hingston, M.R.C.S., L.R.C.P., L.S.A., of a son.
JONES.—On July 8th, at Lansdown-road, Lee, S.E., the wife of George Jones, M.B., of a son.
MACVICKER.—On July 10th, at Isleham, Cambs., the wife of C. G. MacVicar, A.B., M.B., of a son.
RAYNER.—On July 10th, at Harcourt House, Camberley, the wife of Herbert E. Rayner, F.R.C.S., of a daughter.
STEVENSON.—On July 3rd, at Ivy Lodge, Temple Sowerby, Penrith, the wife of Louis E. Stevenson, B.A., M.B., B.C. Cantab., of a daughter.
WHITE.—On July 9th, at Priory-row, Coventry, the wife of F. Faulder White, F.R.C.S., of a son.

MARRIAGES.

CASTLE—PETERS.—On July 9th, at St. Stephen's Church, South Kensington, Richard Feild Castle, M.B. Camb., of Warfield, Yorkshire, to Mary Maud Sullivan, only daughter of Phillip H. Peters, of The Cedars, Bromley-common, Kent.
EDWARDS—WEATHERLEY.—On July 9th, at St. George's, Perry-hill, Catford, Kent, Arthur Spencer Edwards, M.B., C.M., of Matlock, Derbyshire, to Ada Margaret, eldest daughter of Edwin Weatherley, of Catford.
WHITFIELD—TUTTLE.—On July 8th, at Avon, New York, U.S.A., Arthur Whitfield, M.D., M.R.C.P., of Wimbledon, Surrey, to Margaret Wadsworth, eldest daughter of the late Charles F. Tuttle, of Rochester, New York.
WILKINSON—ASTLETT.—On July 14th, at Camberwell, S.E., T. B. P. Wilkinson, M.B., B.Ch., B.A.O., of Plymouth, eldest son of the late Dr. T. Wilkinson of Clonaslie, Ireland, to Celia, eldest daughter of J. H. Astlett of Mundania-road, Honor Oak, and Fore-street, E.C. No cards.

DEATHS.

BRETT.—On July 11th, at Watford House, Watford, Herts, Alfred Thomas Brett, M.D., C.C., aged 68 years.
JEPHSON.—On July 8th, at Glasgow, John Holmes Jephson, M.D., of Warwick-gardens, Kensington, Surgeon-Major, late of the 49th Regiment.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

EDITORIAL NOTICE.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this Office.
Lectures, original articles, and reports should be written on one side of the paper only.
Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers, not necessarily for publication.
We cannot prescribe or recommend practitioners.
Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."
Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*
We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

The Index for the first half-yearly volume for 1896 was given in the issue of June 27th. The practice of supplying loose copies has been discontinued, the Index having been placed in the centre of the journal, whence it can easily be detached, and placed either at the beginning or at the end of the volume.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1896 are now ready. Bound in cloth, gilt lettered, price 12*s.*

Cases for binding the half-year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, or post free 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

"DJAMBI."

To the Editors of THE LANCET.

SIRS,—In reply to Mr. Price, Pengawar djambi is used as a local hæmostatic as well as for plugging. It can be obtained in ounce boxes from Messrs. Parke, Davis and Co., 21, North Audley-street, Grosvenor-square, London, W. I am, Sirs, yours truly,
Sheffield, July 13th, 1896. THOS. E. B. MEYLER, L.R.C.P. & S.IREL.

MEDICAL CHARGES.

AT the county-court, Weston-super-Mare, before His Honour Judge Austin, Robert Simpson, a medical practitioner of Bournemouth, formerly of Bristol, sued Mrs. Wilkinson, 9, Grove-place, Weston-super-Mare, formerly of Kingsdown, Bristol, for medical attendance and medicine to the value of £12 6*s.* No reply was made to Mr. Simpson when he sent his account till proceedings were threatened. The defence then set up was that Mrs. Wilkinson, a widow, was living as the housekeeper of her father and that the father had always sent for Mr. Simpson and was liable. The Judge gave an order for the plaintiff for the amount claimed. Both the defendant and her father probably now much regret that they did not promptly discharge a reasonable account.

A QUERY.

To the Editors of THE LANCET.

SIRS,—Could any of your readers inform me as to whether it is possible to replace the two terminal phalanges of the index finger by an artificial finger of any description? I am, Sirs, yours truly,
July 11th, 1896. PHALANX.

"THE USE OF THE LEFT ARM BY NURSES."

To the Editors of THE LANCET.

SIRS,—This habit has always appeared to me to be the probable cause of left-handedness in children. I should like to know if the observation of others has led to a similar opinion.

I am, Sirs, yours faithfully,

Old Cavendish-street, W., July 9th, 1896. EDWARD HUXLEY.

CARBONATE OF GUAIACOL.

A SURGEON would be obliged by being informed in full detail as to the exhibition of carbonate of guaiacol (1) by inhalation, (2) by skin absorption, and results where experience has been considerable.

THE MANAGEMENT OF INSTITUTE NURSES.

To the Editors of THE LANCET.

SIRS,—Now that we are so over nursed, now that the Nursing Institute accounts are paid so promptly and the medical man's bill left still further in the lurch than formerly, it behoves the general practitioner to be unusually careful as to the kind of trained assistance he employs. To be dependent on an institute where the nurses are supplied and withdrawn according to the good will of the lady superintendent, and frequently without consulting or warning the medical attendant at all, is a very serious matter often for both patient and medical man, to say nothing of the annoyance caused to the household. Happy is the man who has his own nurses whom he has trained himself and who will serve him faithfully afterwards.

When one applies to an institute it is always doubtful whether the nurse one knows to be particularly suitable for a special case, is obtainable or not; but having secured her by arrangement some time beforehand (when possible) there is never any certainty of the possibility of being able to retain her; she is liable to be sent off to some case more urgent or important from the lady superintendent's point of view, and an inferior substitute supplied at a moment's notice, the practitioner not even being aware of the occurrence till his next visit.

Considering the time and trouble we give gratuitously to the proper training of our nurses, to the setting up of their "homes," and to the making of their occupation a financial success, it seems a little strange that no reduction in charges is made for attendance by these said institutes on medical men or their families when ill. The nurses when ill we attend for nothing, supply with medicine, and take into our hospitals, the institutes we often supply with attendants patients, but we ourselves when ill are shown no consideration in the matter of charges. That nurses from an institute should be allowed to prescribe and order remedies from a chemist on their own account for one's patients is another startling point of management that wants inquiry into and promptly checking. That nurses should venture to say of a medical attendant that he knows nothing about a disease because they see it being treated in a different manner to that which their small experience and half knowledge has taught them is another scandalous mismanagement for which those in office are responsible. It is high time that more teaching was given on manners and etiquette in nursing and less minutiæ taught. If the profession does not look to it quickly the nurse will supplant the general practitioner both in fees and general hold of patients in a most unsatisfactory manner. Already ladies ask institute nurses out to afternoon tea that they may take the children's temperatures, look at their throats, give a presumptuous diagnosis, and prescribe a doubtful remedy. Whether a ridiculous remedy or a doubtful diagnosis does most harm matters not, but a presumptuous nurse should be dismissed from a decent institution. Good nurses that work on their own account and receive all their hard earned wages in the legitimate art of nursing are respected and valued by all, and always must and will be. But unless these Nursing Institutes are kept more under the management of medical men a very grave evil must ensue; the sick are liable to be erratically nursed and a great injustice is likely to be done to the general practitioner, even though he be the man who has taught, trained, and attended the nurses of the institute he has helped, encouraged, and supported from its birth.

I am, Sirs, yours truly,

July 13th, 1896. A COUNTRY PRACTITIONER.

DERMATITIS FROM CRAB BITES.

ACCORDING to the *Maryland Medical Journal* Dr. T. C. Gilchrist of Baltimore has observed many cases of dermatitis among persons who have to handle live crabs. It is caused by scratches from the crab shell as well as by bites. A slight abrasion of the skin is first noticed, usually upon the finger, from which the patch starts and travels up and down the fingers and spreads out over the palm and back of the hand. The margin becomes raised, red, and is particularly well-defined. There is no pain on pressure and it never goes on to suppuration.

WANTED, A BOOK ON HYGIENE.

To the Editors of THE LANCET.

SIRS,—Can you or any of your correspondents kindly inform me which is the best journal on hygiene in the United States?

I am, Sirs, yours truly,

June 22nd, 1896. HYGIENE.

"THE ESTIMATION OF SUGAR IN THE URINE."

To the Editors of THE LANCET.

SIRS,—In answer to your correspondent of last week about Fiehig's saccharometer, to which I referred two years ago, I should be glad if you will tell him that the obvious advantage is compactness of the instrument, which indicates the result on a scale without any necessity for comparison or calculation. But the defect of it is that it is so susceptible to changes of temperature (and probably pressure) that it gives very varying results unless these are allowed for and corrected, so that in practice it appears to me to present no advantage, but on the contrary, serious disadvantages. I gave it a good trial and then abandoned it.

I am, Sirs, yours truly,

ROBERT SAUNDBY.

Edmund-street, Birmingham, July 14th, 1896.

Patent.—It is possible, but it is not common or commendable. The practice of surgeons is to be satisfied with the credit of devising any novelty in surgical instruments. The art of surgery would be much hindered if every improvement in surgical instruments were to be patented.

A MATTER OF ETIQUETTE.

To the Editors of THE LANCET.

SIRS,—On the death in 1890 of my late father I was appointed by the board of management honorary dental surgeon to the Montgomeryshire Infirmary. This appointment was confirmed at the next annual general meeting of governors, and I have been re-elected at each annual meeting since. At the annual general meeting of governors in 1895 a letter from Mr. C. M. Kershaw was read, in which, although no vacancy existed, he offered his services as dental surgeon to the institution. After the old staff, including myself, had been by resolution re-elected *en bloc*, it was proposed and seconded that Mr. Kershaw be added to the staff, his supporters, while paying a tribute to my services in the past, urging that as he was a man of means his appointment would probably be a financial benefit to the infirmary and that the more dental surgeons there were on the staff the better it would be for the patients. He was elected, eleven out of the twenty-one governors present voting in his favour. About 120 governors were absent from the meeting. During the whole of the year following his appointment Mr. Kershaw did not once attend at the infirmary.

Previously to 1895 my name appeared among the names of the medical staff of the infirmary in the annual report in this form; the qualification following the form of abbreviation used in the "Medical Directory":—

DENTAL SURGEON:
Albert Maurice, L.D.S.R.C.S.Ed.

After Mr. Kershaw's election in 1895 the names appeared as follows:—

DENTAL SURGEONS:
Albert Maurice, L.D.S.R.C.S.Ed.
C. M. Kershaw.

But this year according, as I am told, to Mr. Kershaw's instructions, it appears:—

DENTAL SURGEONS:
Albert Maurice, L.D.S.R.C.S.Ed.
C. M. Kershaw, R.D.S., D.S.G.B.

The letters R.D.S., or D.S.G.B., are not to be found in the list of qualifications published by authority of the General Medical Council at the beginning of the Dentists' Register, and I think you will agree that the assumption of them by Mr. Kershaw is an attempt to convey the impression that they represent qualifications obtained by him as the result of study and examination when such is not the case. Mr. Clement Maguire Kershaw was registered by the General Medical Council on July 22nd, 1891, thirteen years after the Dentists Act was passed, as having been in practice before the passing of that Act in 1870, notwithstanding that the Act laid down that no one should be registered after August 1st, 1879, as having been in practice before it was passed. I understand that Mr. Kershaw was registered under Clause 37, on the strength of a declaration that in 1878 he was a pupil of Mr. William Maxwell, of Market-street, Broadbottom, Lancashire.

My object in writing this letter is to ask for an expression of opinion from my fellow-practitioners of the medical and dental professions as to whether it is consistent with my duty as a member of an honorable profession to remain on the staff of the Montgomeryshire Infirmary with Mr. Kershaw as a colleague? I am, Sirs, yours truly,

Welshpool, July 6th, 1896. ALBERT MAURICE.

Inquirer is thanked; the earlier date is probably the correct one.

R. N.—"The Operations of Surgery" (Jacobson) is recommended.

WANTED, AN ASYLUM.

To he Editors of THE LANCET.

SIRS,—Could you or any of your readers inform me if there is any asylum or institution where a boy of weak intellect (not an idiot) could be received for a small sum weekly. The parents are only working people and their means very small. An ordinary school is quite unsuitable, and I thought there may be some semi-charitable institution for such cases. Apologising for troubling you,

I am, Sirs, yours truly,

July 4th, 1896. V. M.

THE TREATMENT OF COLLEAGUES.

To the Editors of THE LANCET.

SIRS,—I shall be glad of your opinion and advice under the following circumstances. A. takes a practice five years ago and calls on B., a neighbouring practitioner. B. does not return A.'s call nor acknowledge him in any way. A. lately has moved to within a few doors of B., and shortly after doing so is called to one of B.'s patients, whom he attends during B.'s absence from home, paying three visits; a few days after this B.'s coachman calls and asks A. to attend another case for B. in his absence which A. does, reducing a hernia. B. has in no way acknowledged A.'s attendance in either case. Would it be right for A. to send in the bills to B.? If not, what would be the correct course for him to adopt? Of course, if B. had acknowledged A. or his services, A. would have been pleased to waive any pecuniary claim on B.

I am, Sirs, yours faithfully,

July 14th, 1896. A

*** A.'s duty is clear in regard to these cases, to report them to B. with an account of the attendance, crediting it to B. But though the duty is clear it is not easy. It is necessary to overcome evil with good. But it is always right to try to do so. We do not say, and we do not think, that it will be A.'s duty, and without any courteous response on B.'s part to A., to continue such amenities for an indefinite time. But, for the present, that is our view of the case.—ED. L.

M.B., C.B. Cantab.—B. should have insisted on C. being informed by the friends of the visit of mother and brother that he, B., should see the case, and on seeing it in consultation with C. But we see no proof that B. acted with any intentional or actual discourtesy to C., who naturally felt hurt at the way in which he was treated by the family—perhaps ignorantly. The relations of parties were complicated, and we think C. should have met B. in consultation on the second occasion. Medical men must make allowances for human nature.

DEATH FROM CANCER OF THE STOMACH MORE THAN TWENTY YEARS AFTER REMOVAL OF THE RIGHT BREAST FOR THE SAME DISEASE.

To the Editors of THE LANCET.

SIRS,—At the beginning of February of this year I had as a patient an old woman, aged eighty-two years. When I saw her first she was suffering from right pneumonia and pain over the pyloric end of the stomach, a thickening being also perceptible in the latter situation. The pneumonia ran a quick and favourable course, and she felt so well in fourteen days' time that she foolishly got up as she was anxious to see some cows she had. Two days after this she was seized with severe pain in the stomach and vomited about ten ounces of blood mixed with curdled milk. She never fully rallied after this, and died four days after the onset of the hæmatemesis. She had been losing flesh for about six months previously to her last illness, and often complained of pain after food—a most unusual complaint for her. The interesting part of her history consisted in the fact that more than twenty years ago she had had her right breast amputated for cancer by Sir Joseph Lister in the Edinburgh Royal Infirmary. She thus died from cancer of the stomach more than twenty years after she had had her breast removed, showing how susceptible her system must have been to cancerous disease.

I am, Sirs, yours faithfully,

JOHN R. GIBSON, M.D. Glasg., D.P.H.F.P.S. Glasg.

Paisley, July, 1896.

Perplexed ought not to divulge his late patient's secret, seeing that it was confided to him, or at least that he had become possessed of it during professional attendance, unless compelled by process of law. The petitioner can subpœna him to give evidence, but he is not compelled to say what his evidence will be beforehand. He is advised to take no notice of the threats.

DRUGGISTS AS CONSULTANTS.

OUR attention is called to a druggists' bill in which he boasts his drugs and their therapeutical efficacy, winding up with the following audacious announcement:—

> Note: Mr. Griffiths (of 71, Market-street, Droylsden, and 394 and 690, Ashton Old-road, Openshaw) may be consulted at the Openshaw shops any morning between 10 and 10.30, and evening at 9.30.

M.R.C.S. Eng.—If the certificate is required our correspondent will be able to certify that the woman being in the eighth month of her pregnancy there was a very sufficient reason for sudden death. He cannot state the exact cause on account of the husband's own reluctance to a necropsy. This medical statement could be supplemented by a sworn statement from the relatives that the woman never had fits, supposing that to be the case. The coroner ought, it appears from our correspondent's account of the case, to have ordered a post-mortem examination.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, July 16th, 1896.

Date.	Barometer reduced to Sea Level and 32° F	Direction of Wind	Dry Bulb	Wet Bulb	Solar Radiation in Vacuo	Maximum Temp Shade	Min. Temp	Rainfall	Remarks at 8.30 A.M.
July 10	29·99	S.W.	68	64	122	78	63	...	Overcast
,, 11	30·26	S.E.	64	58	115	76	55	...	Fine
,, 12	30·35	E.	66	60	115	83	56	...	Hazy
,, 13	30·19	S.	70	63	121	88	61	...	Hazy
,, 14	30·02	S.W.	72	63	130	90	63	...	Hazy
,, 15	29·96	N.E.	67	62	118	78	66	...	Cloudy
,, 16	30·08	N.	59	56	64	58	58	...	Overcast

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (20th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M., Ophthalmic 1.15 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), St. Mark's (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.).

TUESDAY (21st).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), Guy's (1.30 P.M.), St. Thomas's (3.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (2 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.).

WEDNESDAY (22nd).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.).

THURSDAY (23rd).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.).

FRIDAY (24th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M., Ophthalmic 10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.).

SATURDAY (25th).—Royal Free (9 A.M. and 2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), University College (9.15 A.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Cancer (2 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEDNESDAY (22nd).—WEST LONDON POST-GRADUATE COURSE (West London Hospital, W.).—5 P.M. Mr. Cheatle: Surgical Cases.

During the week marked copies of the following newspapers have been received:—*Rochester Journal, Kidderminster Shuttle, Hampshire Advertiser, Lichfield Mercury, Gray's Standard, Warwick Times, Eastern Daily News, Dundee Advertiser, North British Daily Mail, East Anglican Daily Times, Cromer Postt, Times of India, Wolverhampton Chronicle, Manchester Courier, Pioneer Mail, Citizen, Builder, Liverpool Daily Post, Halifax Guardian, Prescot Reporter, Brighton Gazette, Oban Times, Liverpool Mercury, Hereford Times, Leicester Post, Madras Times, Birmingham Mail, Bristol Mercury, Sussex Daily News, Newcastle Journal, Western Daily Press, Sheffie'd Telegraph, Yorkshire Post, Bradford Observer, Kent and Sussex Courier, Leeds Mercury, Gloucester Journal, Contract Journal, Christian World, Hemel Hempstead Gazette, Hertfordshire Mercury, City Press, Jersey Express, Weekly Free Press and Aberdeen Herald, Local Government Chronicle, Reading Mercury, Le Courrier de la Presse (Paris), Redditch Indicator, Cork Herald, Medical Record, Rossendale Gazette, Local Government Journal, Mining Journal, Surrey Advertiser, Carpenter and Moulder, Morley Observer, Building News, Glasgow Weekly Herald, Leigh Chronicle, Architect, Philadelphia Inquirer, Pullen's Kent Argus, East Essex Advertiser, Swindon Advertiser, Chorley Standard, West Middlesex Herald, Yorkshire Evening Post, &c., &c.*

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